SERVICE MANUAL

CASSETTE RECORDER

SANYO

M9990LU

(EUROPE)

SPECIFICATIONS

Recording system	AC bias, 4 tracks stereo
Erasing system	DC erase
Tape speed	4.75 cm/s (1-7/8 i.p.s.)
Rewind and fast forward time	Rewind: 2 min. (C-60) Fast forward: 3 min. 40 sec. (C-60)
Frequency range	FM: 87.5 – 108MHz MW: 525 – 1,605kHz LW: 150 – 28.5kHz SW: 5.95 – 18.0MHz
Terminal impedance	EXT. MIC: 10k ohms (0.3mV) REC/PB (input) 10k ohms (1mV) (output) 18k ohms (0.5V) EXT SP : 6 – 8 ohms HEADPHONES: 8 ohms
Frequency response	50 – 14,000Hz (CrO_2) 50 – 14,000Hz (FeCr) 50 – 12,000Hz (NORMAL)
Output power	3.5W x 2 maximum
Power source	DC: 12V "D" (UM-1) x 8 1.5V "AA" (UM-3) x 1 (Clock) 12V Car battery adaptor AC: 115/230V 50Hz
Power consumptions	20W
Dimensions	490(W) x 123(D) x 295(H) mm (19-3/8" x 4-7/8" x 11-5/8")
Weight	Approx. 6.5 kg (14 lbs. 5 ozs.) including batteries

*Specification subject to change without notice.

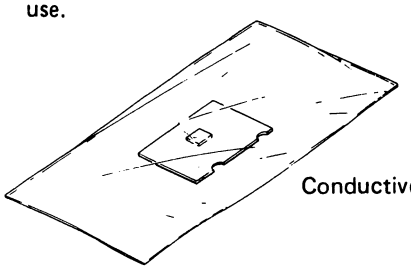
HANDLING & REPAIR OF LSI's

CAUTION

The large-scale integrated circuit (LSI) incorporates in its small size highly sophisticated circuitry. It must be handled with utmost care to protect it against destruction because it works on a very weak current and is highly sensitive to static electricity.

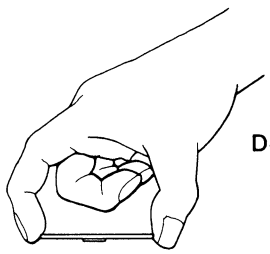
A. PRECAUTIONS FOR LSI-MOUNTED CIRCUIT BOARD

1. Do not take this LSI-mounted circuit baord out of the electrically conductive plastic case right before use.



Conductive plastic case

2. When handling this circuit board, hold it at its ends and take care not to touch its foil-pattern and components parts mounted thereon.

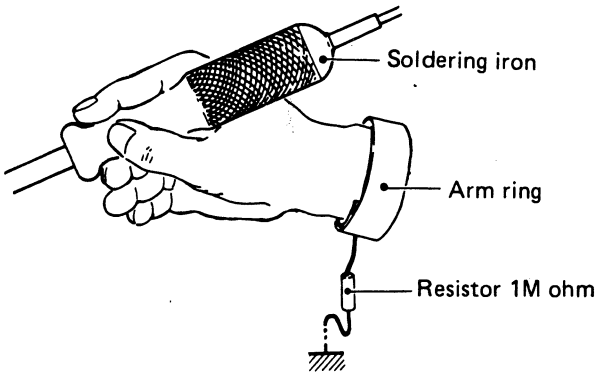


Do not touch terminals

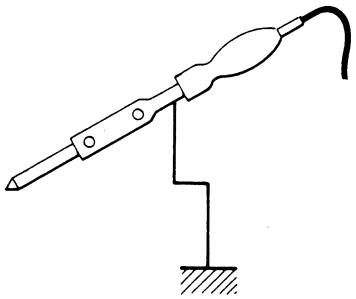
3. The LSI shouldn't be kept in a Hot, high moisture place. Strong magnetism is also detrimental.

B. REPAIR

1. Please be sure to unplug the power cord before setting or taking off an LSI. Do not forget to ground the B-lines (at the one specified spots).
   Do the same when replacing the printed circuit board. Three parts to be grounded: (at both ends of) electrolytic capacitors C2, C4.
2. Be sure to connect a grounding conductor to every instrument and tool to be employed. (Either at E or G) The engineer who does the repair work should have a grounding conductor attached to his body (he should wear an arm ring connected to a grounding line having a resistance value of 1M ohms)
   Before handling an LSI, he should touch the B-line and discharge into the earth static electricity charged in his body.



3. AC leakage from the soldering iron being employed should be prevented. It must be less than 1V when the iron is hot. Be sure to ground it before use.



C. MISCELLANEOUS

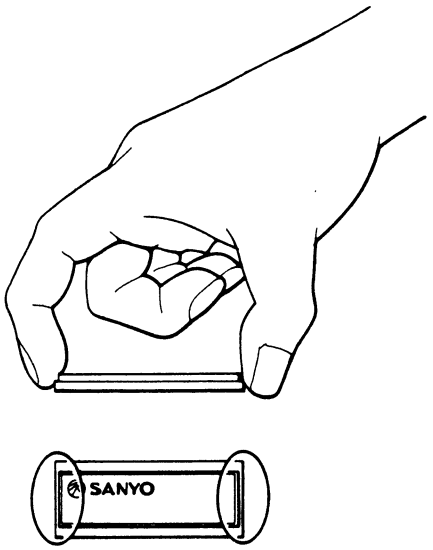
1. Do not wipe an LSI with a dry cloth. (If necessary, use a cloth impregnated with antistatic agent.)
2. A tester can be used for measuring voltage and amperage. It should not be used for measuring resistance.

D. HANDLING OF P.C.B. ASSEMBLY

1. Plase a conductive urethane foam sheet on the repair desk.
2. Do not take it out of an electrically conductive case until immediately before use.
3. Do not touch the patterned surface of the PCB with hand.
   If you can not get an arm ring and a conductive urethane foam sheet in your stateside, please order to end of this book address:

HOW TO HANDLE LCD

Always Keep LCD (Liquid Crystal Display) fitted with Bias Plate (Deflecting Filter), because LCD is sensitive to ultra-violet reys.



1. Storing of LCD

a) Store LCD in some dark place until you use it. Be careful that you do not keep LCD under direct rays of the sun or other strong light sources.

b) Keep LCD in 0°C (32°F) to 50°C (122°F) temperature and in low humidity.

2. How to Hold LCD

a) When holding LCD. you should hold both ends of the package carefully with your fingers. Don't touch the surface of the terminal.

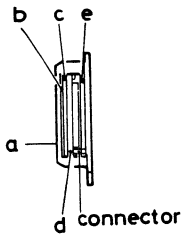
b) Be careful that LCD surface is not subjected to strong pressure or struck.

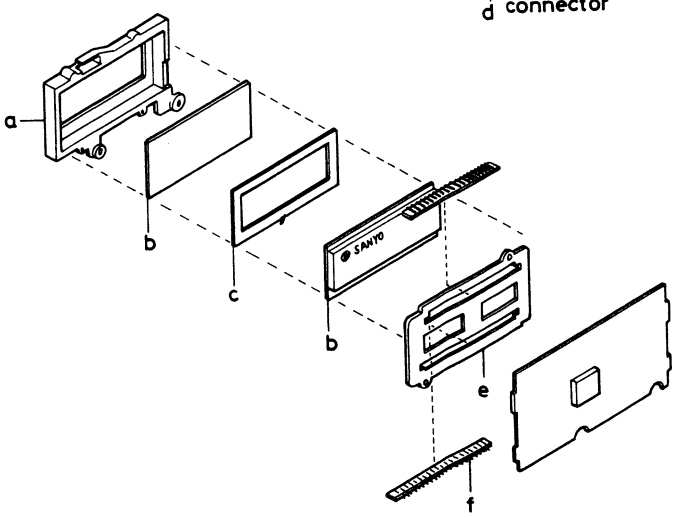
3. Precautions in Repairing

a) When you change an old LCD for a new one, give attention to the up and down sides for correct fitting directions.

b) Don't touch the surface of the terminal with your tester or other tools.

c) Be careful to keep LCD away from static electricity the same as you do for Printed Circuit Board with LSI (Large Scale Integrated Circuit).





ⓐ BRACKET FRAME
ⓑ BIAS PLATE (Deflecting Filter)
ⓒ SPACER
ⓓ LCD
ⓔ SPACER
ⓕ CONNECTOR

PACE READJUSTING OF THE CLOCK

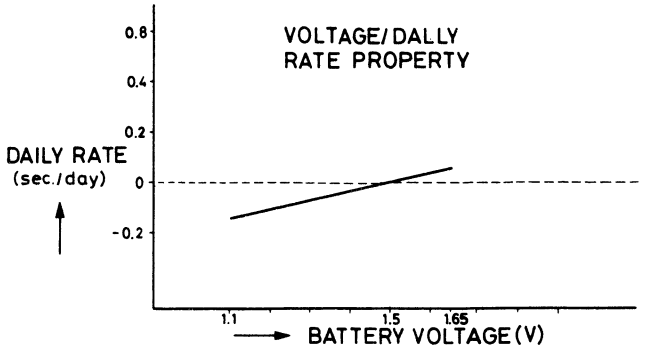
You scarcely need readjust the pace of Sanyo's Clock-Radios, because each product has been severely and precisely adjusted on the assembling and testing line with Quartz Timer (Pacemeasuring machine equipped exclusively for Sanyo timepieces with LCD). However, if you want to change some parts such as LCD, Trimmer and so on, you may take the following steps:

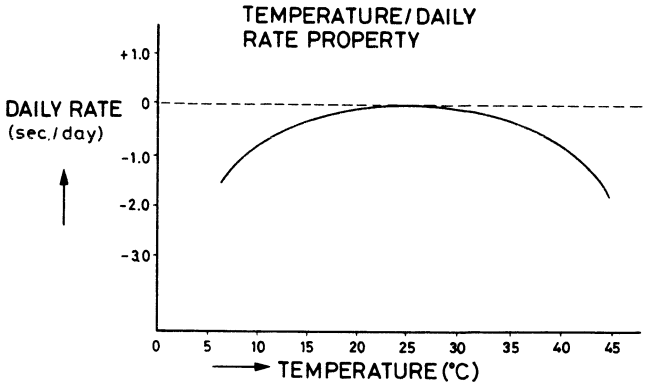
1. Preparation Before Readjusting

Turn off the radio switch as the first step.

1) Give your Clock-Radio a rest in a room of 25°C ± 3°C (73°F ± 5°F) temperature for about 1 hour. Don't start any repairing work while LCD and Trimmer are in unstable condition, because they are sensitive to heat, and may change their oscillating frequency.
2) As you see, Trimmer for pace readjusting is rather small. Therefore handle it carefully with a tiny screw driver with minus-point (−).
3) DC 1.5V ± 0.1V power source is recommended to supply power to the clock.

2. Special Properties of the Clock

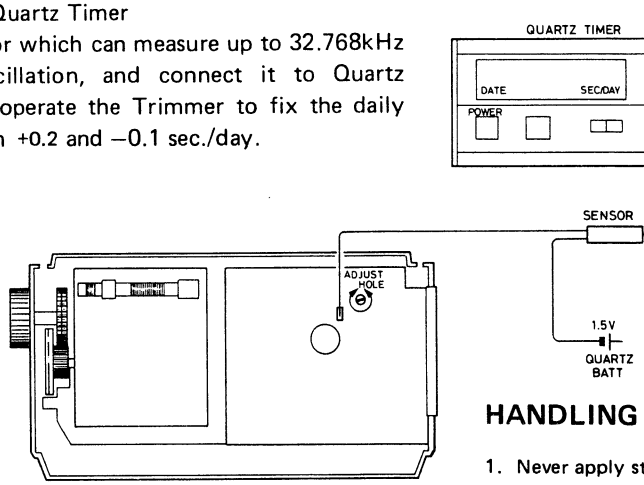




3. How to Readjust

1) When Using a Quartz Timer

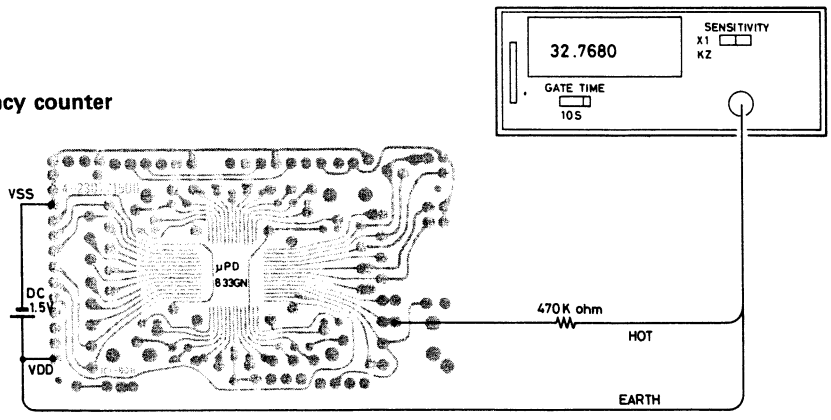
Choose a sensor which can measure up to 32.768kHz of crystal oscillation, and connect it to Quartz Timer. Then operate the Trimmer to fix the daily rate to between +0.2 and −0.1 sec./day.



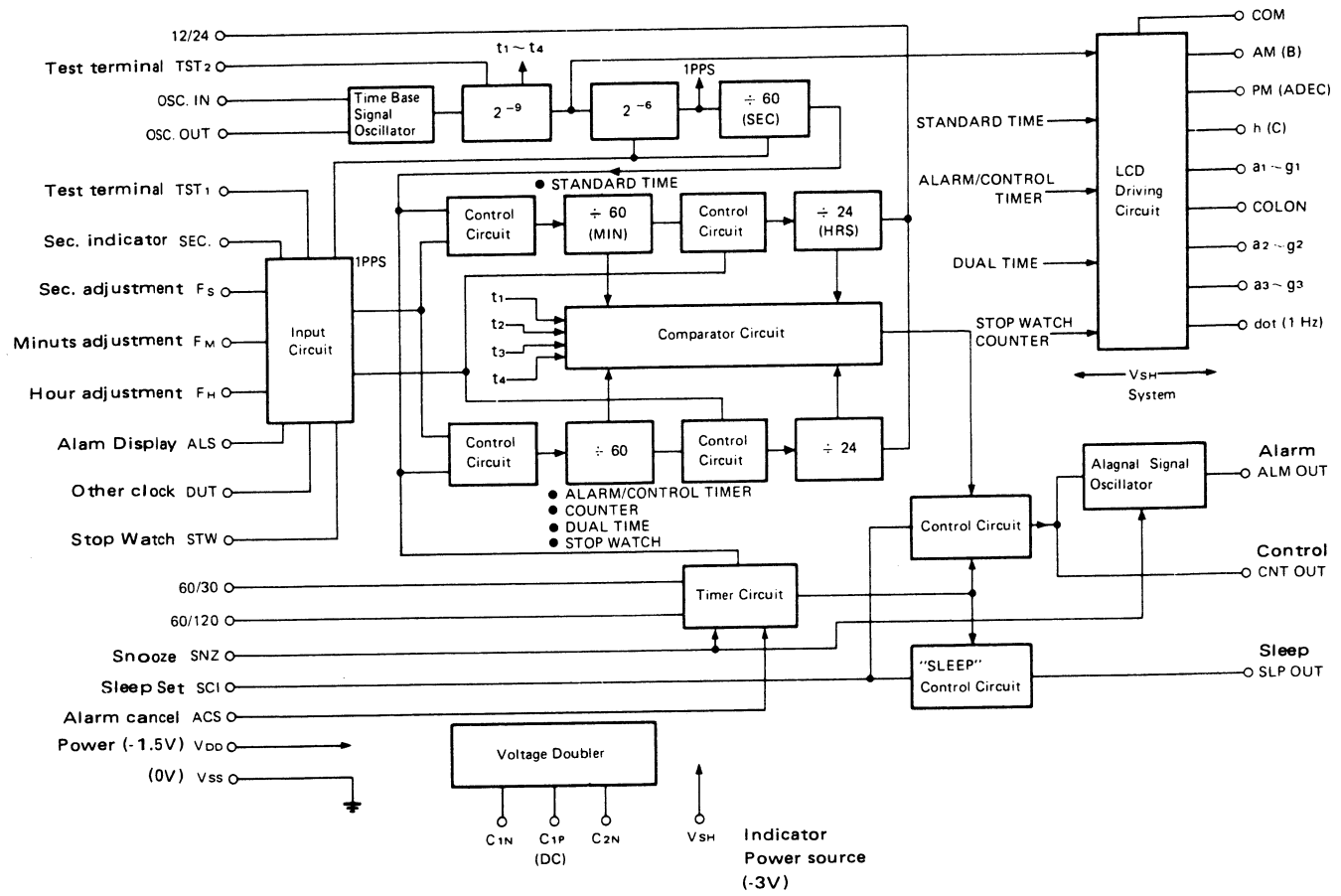
HANDLING OF TRIMMER AND CRYSTAL

1. Never apply strong force or impact to the trimmer and crystal.
2. When handling crystal leads, hold leads and bend carefully so as not to apply force to lead roots.
3. Solder trimer and crystal at 270°C, and within 3 seconds.
4. After adjusting and mounting, do not touch the parts.

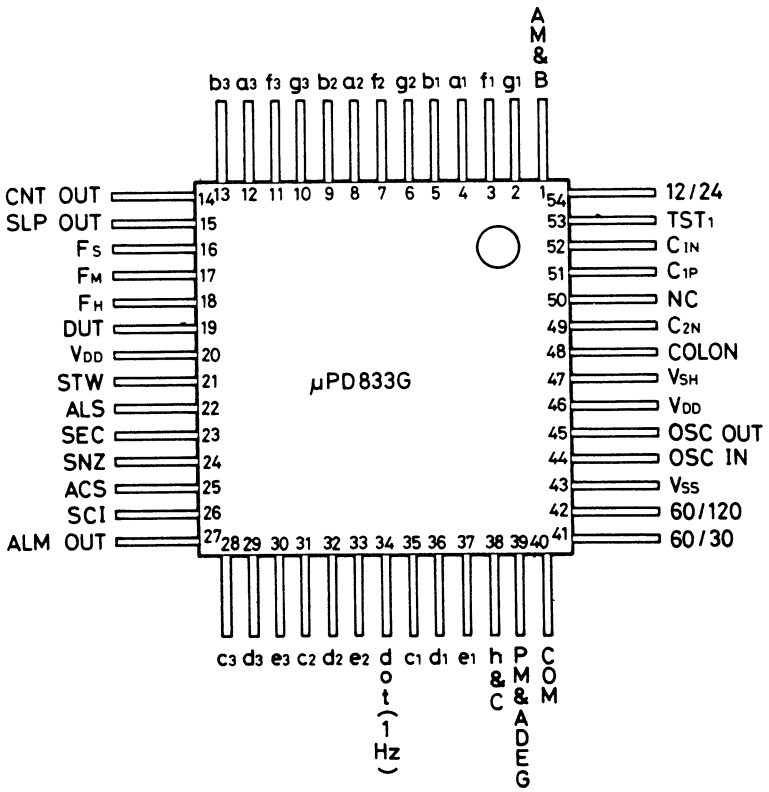
4. When using frequency counter



BLOCK DIAGRAM (CLOCK)



TERMINAL OF CLOCK LSI



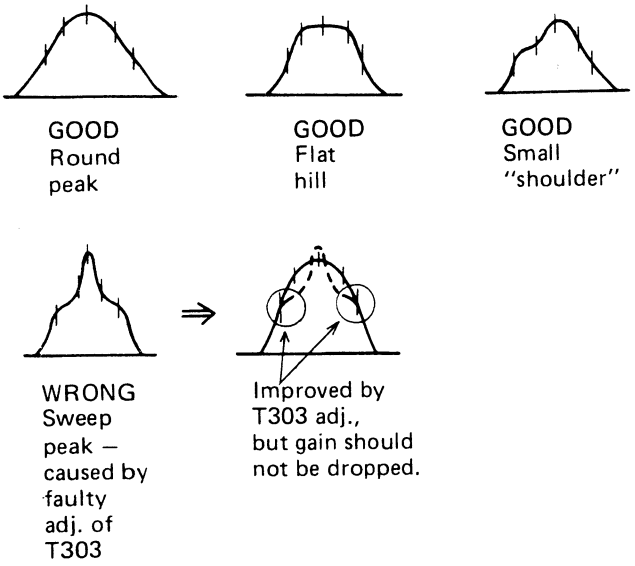
TUNER ADJUSTMENT

ADJUSTMENT OF AM FREQUENCY COVERAGE

(1) Adjust the AM frequency coverage at 505 kHz and 1650 kHz.
(2) Set the dial to 505 kHz, and turn L109 to adjust to 505 kHz.
(3) Set the dial to 1650 kHz, and turn CT104 to adjust to 1650 kHz.
(4) Repeat steps (2) and (3) to adjust to each frequency.

ADJUSTMENT OF FM IF

(1) The IF waveform should be mirror symmetrical and the wave center should be adjusted to 10.7 MHz as far as possible. However, since ceramic filter is used, the wave center should be adjusted to the center frequency of the ceramic filter used, not necessarily equal to 10.7 MHz, although the waveform should be mirror symmetrical.
(2) The waveshape should be as illustrated below.



(3) S-curve should be vertically symmetrical around the center of IF waveform.

ADJUSTMENT OF FM FREQUENCY COVERAGE

(1) Keep AFC switch turned off.
(2) Adjust coverage at 88 kHz and 108 MHz.
(3) Set the dial to 87 MHz, and turn L107 to adjust to 87 MHz.
(4) Set the dial to 109 MHz, and turn CT102 to adjust to 109 MHz.
(5) Repeat steps (3) and (4) to adjust to each frequency.

ADJUSTMENT OF TUNING INDICATOR

(1) The color of indicator LED is green.
(2) Adjust turning indicator after FM and AM tracking.
(3) Receive 98 MHz in FM band, and adjust SVR350 to an extent that LED is dimly lit at an input of 18 dB.
(4) Do not turn SVR350 until LED illumination becomes bright, otherwise the actual lighting sensitivity may be discrepant.
(5) Rating of lighting sensitivity
FM 98 MHz : 20 dB ±5 dB
AM 1400 kHz : 68 dB to 80 dB

ADJUSTMENT OF FM MPX SECTION

[1] CONDITIONS OF ADJUSTMENT AND MEASUREMENT

(1-1) Apply modulation input into FM SG from stereo signal generator (SSG). And adjust modulation of SG so that the pilot signal be 7.5 kHz dev. (10% mod.) and the stereo signal be, with SSG at MAIN, 22.5 Hz dev. (30% mod.). Modulation frequency should be 1000 Hz.
(1-2) Keeping the output signal switch of SSG at MAIN, set reception frequency to 98 MHz and tune in to it.
Hereafter "tuning" means this state.
(1-3) During adjustment, keep AFC switch turned off.
(1-4) Hold mode switch at STEREO.

[2] 19 KHZ ADJUSTMENT (V.C.O. ADJUSTMENT)

(2-1) In FM stereo mode, tune in to 98 MHz at 60 dB.
(2-2) Connect the earth wire and hot wire of frequency counter to TP4 and TP5, respectively.
(2-3) Unmodulate FM input. (To unmodulate, turn off both MAIN & SUB signal switch and PILOT signal switch of SSG.)
(2-4) With FM input unmodulated, adjust SVR502 so that the counter frequency be 19 kHz ±100 Hz.

[3] INSPECTION OF V.C.O. KILLER

(3-1) After the 19 kHz adjustment, check the following items.
(3-2) Set mode switch to MONO, and see that 19 kHz changes to 0 Hz.
(3-3) With mode switch at STEREO, set band switch to AM, and see that 19 kHz changes to 0 Hz.

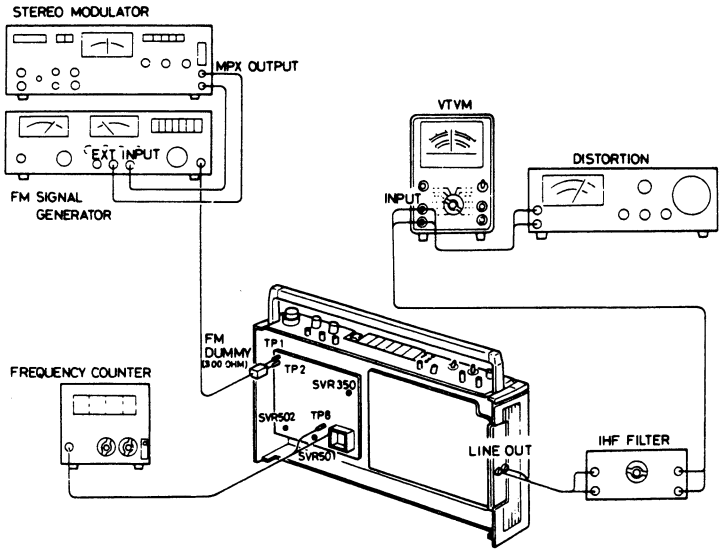
[4] ADJUSTMENT OF SEPARATION

(4-1) Tune in to FM stereo signal (with MAIN & SUB signal and PILOT signal switches turned on) at an input of 60 dB.
(4-2) Keeping treble control at MIN and bass at center, turn VR to adjust the output to standard output.
(4-3) Left side separation
Turn on the LEFT side of output switch. This output is A. And the leakage output gerenated in the right side amplifier is B.
Make sure the difference between A and B is more than 20 dB.
(4-4) After making sure the output difference is more than 20 dB, turn on AFC switch and see that the output difference is also more than 20 dB.
(4-5) Right side separation
In the same way as checking the left side separation, check the output difference caused in the left side amplifier.
(4-6) Since separation is of non-adjusting type, adjust IF waveform and S-curve with special care.
If the separation is inferior, check the IF waveform and T301 adjustment again; if the separation is ruined by turning on AFC, check again if the center of S-curve is deviated.
(4-7) Separation rating
400 Hz, 1000 Hz : More than 20 dB in both L & R chs.
10 kHz : More than 10 dB
(4-8) To check the 10 kHz separation, set the VR to maximum position and turn the treble control to adjust to the standard output.

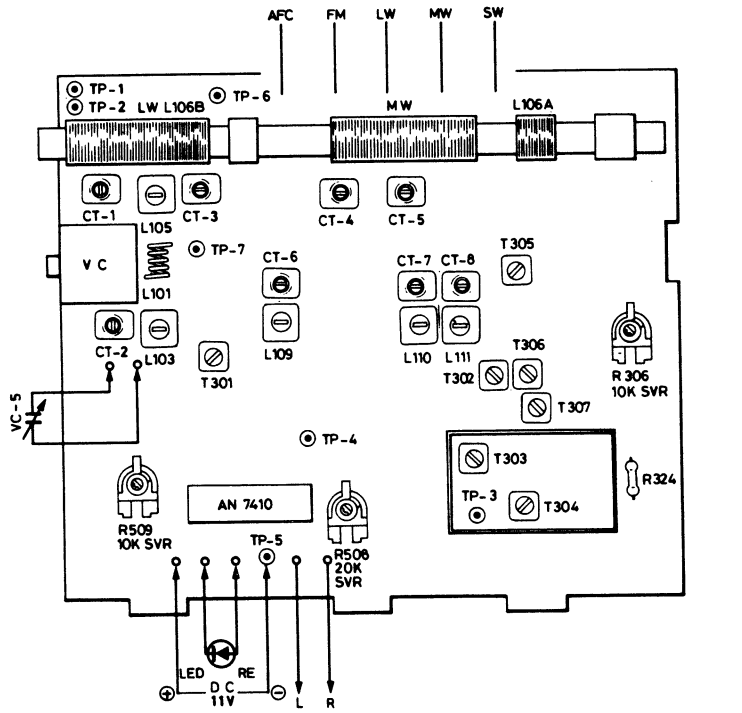
[5] CHECKING OF PILOT LAMP LIGHTING SENSITIVITY (LOCK LEVEL)

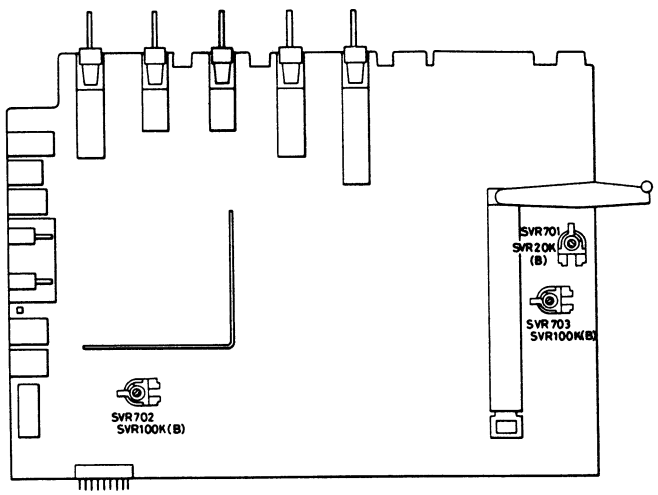
(5-1) The color of indicator LED is red.
(5-2) Tune in under the same condition as above. Once reduce SG ATT to 0 dB and then increase gradually until pilot lamp lights up. Measure the input at this time.
(5-3) Lock level rating: Less than 26 dB

TUNER ADJUSTMENT



PARTS LOCATION





TUNER ADJUSTMENT

MW ADJUSTMENT

Step	Adjusting Circuit	Connections		SG Frequency	Position of tuning dial	Adjustment	VTVM Oscilloscope
		Input	Output				
1	I.F.T.	Connect sweep generator to Test Loop.	Connect oscilloscope to EXT. SP terminals	460 KHz (400 Hz 30% modulation)	Low end of dial scale. At position of unrequired signal.	T305,T306, T307	MAX.
2	OSC.	Connect AM SG to Test Loop.	Connect VTVM to speaker terminals.	505 KHz (400 Hz 30% modulation)	Low end of dial scale	L110	MAX.
3				1650 KHz (400 Hz 30% modulation)	High end of dial scale	CT7	
4	ANT.	Connect AM SG to Test Loop.	Connect VTVM to speaker terminals.	600 KHz (400 Hz 30% modulation)	600 KHz on dial scale	L106A	MAX.
5				1400 KHz (400 Hz 30% modulation)	1400 KHz on dial scale	CT4	
6	Repeat adjustments.						

PREPARE:
1. Set the dial pointer to very left line of dial scale.
2. Connect sweep generator, AM SG, VTVM and oscilloscope.
3. Selector switch to "MW"
4. Use a screwdriver with plastic grip for all adjustments.

LW ADJUSTMENT

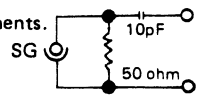
Step	Adjusting Circuit	Connections		SG Frequency	Position of tuning dial	Adjustment	VTVM Oscilloscope
		Input	Output				
1	OSC.	Connect AM SG to Test Loop.	Connect VTVM to speaker . terminals.	145 KHz (400 Hz 30% modulation)	Low end of dial scale.	L111	MAX.
2				295 KHz (400 Hz 30% modulation)	High end of dial scale.	CT8	
3	ANT.	Connect AM SG to Test Loop.	Connect VTVM to speaker . terminals.	160 KHz (400 Hz 30% modulation)	160 KHz on dial scale.	L106B	MAX.
4				280 KHz (400 Hz) 30% modulation)	280 KHz on dial scale	CT5	
5	Repeat adjustment.						

PREPARE:
1. Set the dial pointer to very left line of dial scale.
2. Connect sweep generator, AM SG, VTVM and oscilloscope.
3. Selector switch to "LW".
4. Use a screwdriver with plastic grip for all adjustments.

SW ADJUSTMENT

Step	Adjusting Circuit	Connections		SG Frequency	Position of tuning dial	Adjustment	VTVM Oscilloscope
		Input	Output				
1	OSC.	Connect AM SG. to ANT terminal through IRE dummy.	Connect VTVM to EXT. SP. terminals.	5.8 MHz (400 Hz 30% modulation)	Low end of dial scale.	L109	MAX.
2				19.0 MHz (400 Hz 30% modulation)	High end of dial scale.	CT6	
3	ANT.	Connect AM SG. to ANT terminal through IRE dummy.	Connect VTVM to EXT. SP. terminals.	7.0 MHz (400 Hz 30% modulation)	7.0 MHz on dial scale.	L105	MAX.
4				18.0 MHz (400 Hz 30% modulation)	18.0 MHz on dial scale.	CT3	
5	Repeat adjustments.						

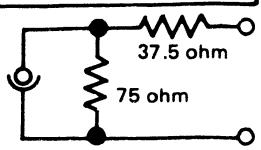
PREPARE:
1. Set the dial pointer to very left line dial scale.
2. Connect signal generator to dummy antenna.
3. Use screwdriver with plastic grip for all adjustments.
4. Selector switch to "SW"
5. Set the Fine Tuning to mechanical center.
6. Use a Dummy antenna as follow.



FM ADJUSTMENT

Step	Adjusting Circuit	Connections		SG Frequency	Position of tuning dial	Adjustment	VTVM Oscilloscope
		Input	Output				
1	I.F	Connect sweep generator to TP-1(H) & TP-2(E)	Connect oscillo-scope to TP3 (H) & IF case (E).	10.7 MHz (0% modulation)	Near max. capacity of VC. at position with unrequired signal.	T301 ~ T303	Adjust the ceramic filter center.
2	Ratio Det.		Connect oscillo-scope to R324 (H) & T304 IF case (E).			T304	75KHz
3	OSC.	Connect FM SG to TP-1(H) & TP-2(E)	Connect VTVM to speaker terminals.	87.25 MHz (400 Hz 30% modulation)	Low end of dial scale	L103	MAX.
4				109 MHz (400 Hz 30% modulation)	High end of dial scale	CT2	
5	ANT.	Connect FM SG to TP-1(H) & TP-2(E)	Connect VTVM to speaker terminal.	90 MHz (400 Hz 30% modulation)	90 MHz on dial scale	L101	MAX.
6				106 MHz (400 Hz 30% modulation)	106 MHz on dial scale	CT1	
7	Repeat adjustments.						

PREPARE:
1. Set the dial pointer to very left line of dial scale.
2. Connect sweep generaotr, FM SG, VTVM and oscilloscope. FM antenna input impedance is 75 ohm.
3. Use a screwdriver with plastic grip for all adjustments.
4. AFC switch OFF.



AMPLIFER ADJUSTMENT

PREPARATION

Supply voltage: 12 volts
Tone controls (bass, treble): Mechanical center
Switches

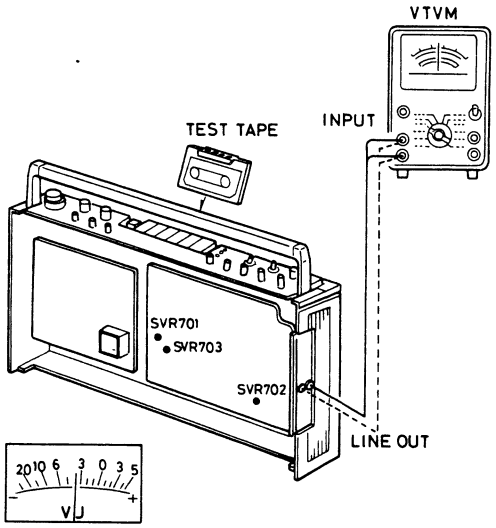
Function switch	:	TAPE
AUTO switch	:	OFF
Tape switch	:	NORMAL
Mode switch	:	STEREO

(1) ADJUSTMENT OF PLAYBACK GAIN

Set volume controls to minimum.
Play back test tape (1 kHz, 0 dB), and adjust SVR701 (20 KB) so that the outputs from line output terminals of both right and left channels be equal to each other.

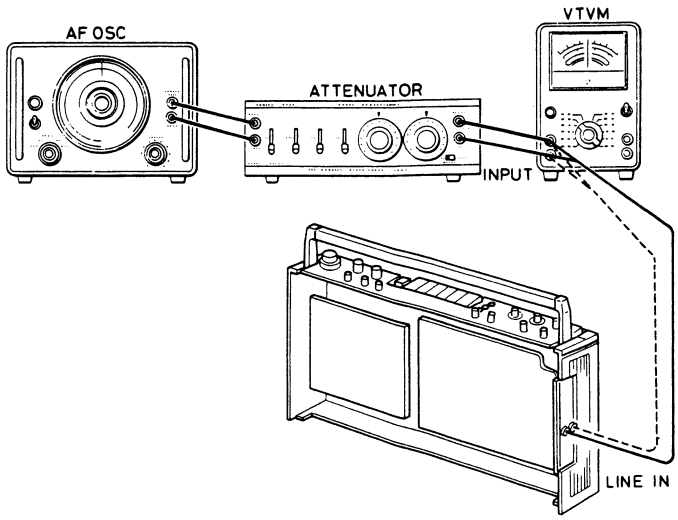
(2) ADJUSTMENT OF METER

Carry out after playback gain adjustment.
Play back test tape (1 kHz, 0 dB), reduce volume controls (simultaneously R and L sides) until the left channel meter indicates – 1 VU.
Adjust SVR703 (100 KB) so that the right channel meter reading be equal to the left channel reading.

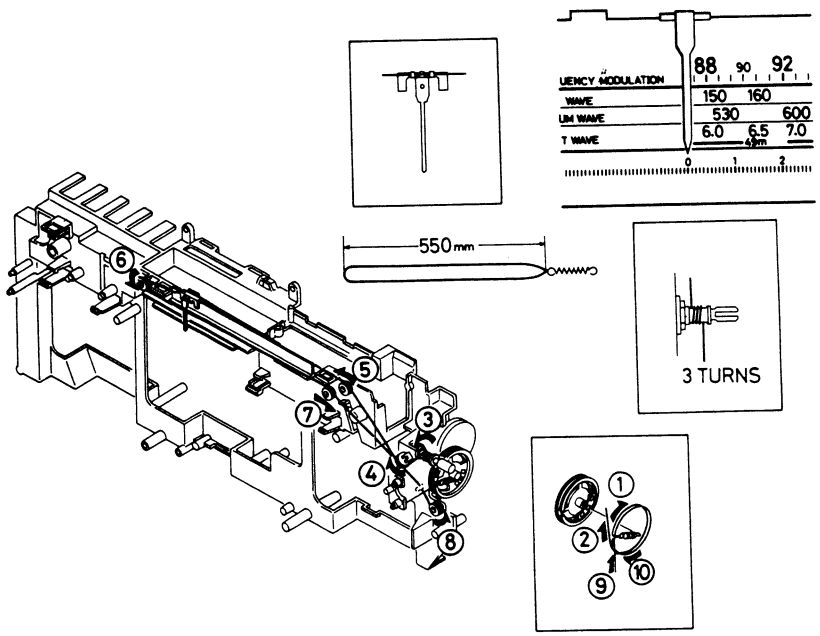


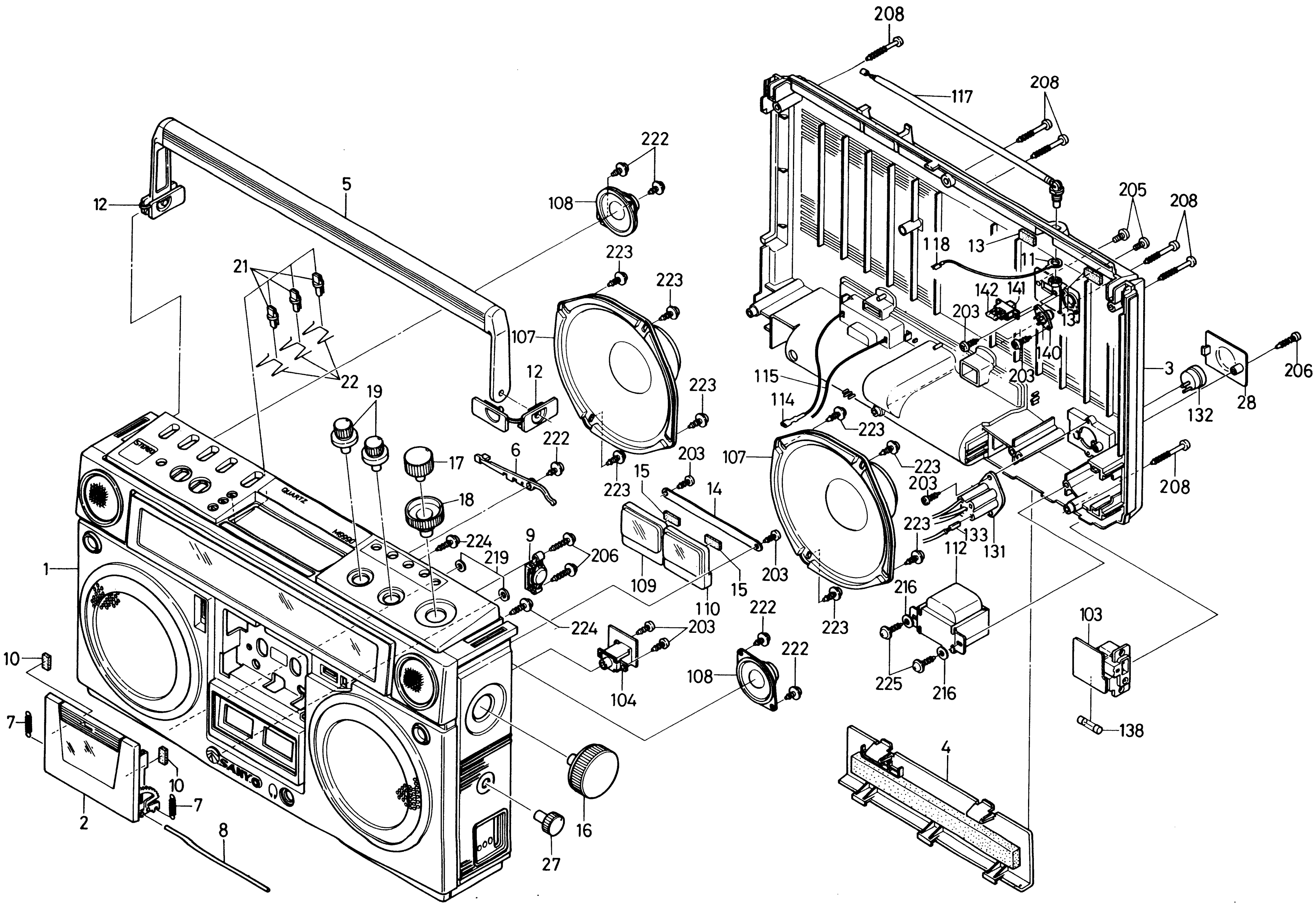
(3) ADJUSTMENT OF RECORDING GAIN

Set volume controls to minimum.
Load with blank tape, set in record mode, and pass a signal of 1 kHz, –30 dB (50 mV) into line input terminal (LINE IN), and one of 1 kHz, –80 dB (0.15 mV) into MIC terminal. Connect vacuum tube voltmeter (VTVM) to the collectors of transistors Q805 and Q905, and adjust SVR702 (100 KB) so that the output from both right and left channels be equal to each other.



DIAL CORD STRINGING

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10
108
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SANYO
QUARTZ
STEREO

PARTS LIST

Key No.	Part No.	Description	Q'ty
PACKING			
	141 6 132T 98203	Individual Carton	1
	141 6 410T 19202	Instruction Manual	1
	141 6 144T 51400	Foam Plastic Case	1
	141 6 144T 51600	Foam Plastic Case	1
	141 6 231T 45705	Inner Polye Cover, Set	1
	141 6 231T 20350	Inner Polye Cover, Instruction B.	1
	141 6 316T 98700	Pad, Handle	1
	141 2 171T 09500	Handle	1
	141 6 311T 03400	Top Pad	2
	141 6 132T 98300	Inner Polye Cover, Mic Stand	1
	141 6 231T 10200	Inner Polye Cover, Mic Stand	2
ACCESSORIES			
	4 243T 77900	Power Cord	1
	4 241T 12671	Cassette Tape	1
	4 153T 10700	Microphone	1
	4 153T 10800	Microphone with Remote	1
	141 0 385T 02900	Bracket Assy, Mic	2
CABINET			
1	**141 0 111T 37403**	Cabinet Assembly	1
2	**141 0 124T 22523**	Top Lid Assembly	1
3	**141 0 126T 26203**	Back Lid Assembly	1
4	**141 0 128T 13200**	Battery Lid Assembly	1
5	141 0 171T 14600	Handle Assembly	1
6	141 2 742T 10500	Lever, Eject	1
7	141 2 855T 06200	Spring Coil, Top Lid	2
8	141 2 753T 52000	Shaft, Top Lid	1
9	141 0 581T 10900	Gear Assembly, Top Lid	1
10	141 2 447T 62000	Cushion, 15x3x2	2
11	123 2 472R 11100	Lug	1
12	141 2 271T 14900	Bracket, Handle	2
13	141 2 447T 15400	Cushion, 10x10x3t	2
14	141 2 373T 06600	Bracket, Meter	1
15	141 2 447T 65000	Cushion, 10x30x2t	4
16	141 2 163T 55500	Rotary Knob, Tuning	1
17	141 2 163T 45600	Rotary Knob, Volume Right	1
18	141 2 163T 45730	Rotary Knob, Volume Left	1
19	141 0 163T 45802	Rotary Knob Assembly, Tone	2
20	141 2 162T 15200	Lever Knob, Clock	2
21	141 2 161T 56900	Push Button, Clock	3
22	141 2 852T 51500	Spring Wire, Clock	3
23	141 2 162T 15300	Lever Knob	1
24	141 2 157T 31701	Inlay	4
25	141 2 157T 31802	Inlay, Eject	1
26	141 2 157T 31803	Inlay, Record	1
27	**141 2 163T 53200**	Rotary Knob, Fine Tuning	1
28	**141 2 132T 03800**	Sign Window, Voltage Select	1
CHASSIS			
51	141 2 161T 56700	Push Button, Band Select	6
52	141 0 162T 14000	Lever Knob Assembly, Switch	5
53	141 2 241T 13200	Veil	2
54	141 2 322T 46000	Shield Plate, Clock	1
55	141 2 361T 15200	Bracket, Volume	1
56	141 2 365T 41200	Bracket, Switch	1
57	141 2 445T 11801	Rubber Cushion, Lamp	1
58	141 2 114T 01700	Frame, Clock	1
59	141 2 352T 33900	Spacer, Clock	1
60	141 2 352T 34000	Spacer, Clock	1
62	141 2 367T 31501	Bracket Socket	1
63	**141 2 472T 01001**	Lug	3
64	141 2 246T 50400	Sheet	2
65	141 2 742T 25100	Lever, R/P	1
66	123 2 566R 12000	Tuning Shaft, Lever & Drum	2
67	141 2 363T 08700	Bracket, VC	1
68	**141 0 311T 30300**	Chassis Assy	1
73	141 0 566T 08400	Tuning Shaft Assembly	1
74	**141 2 415T 01200**	Hexagon Nut	1
75	141 2 581T 11000	Gear	1
76	141 2 581T 11100	Gear	1
77	141 2 538T 09800	Drum	1
78	141 2 855T 26100	Spring Coil, Gear	1
79	141 2 851T 06300	Spring Coil, Drum	1
80	141 2 340T 00200	Rope	1
81	**141 0 153T 44600**	Escutcheon Assy, LCD	1
82	141 2 853T 55400	Spring Plate, R/P	1

Key No.	Part No.	Description	Q'ty
CHASSIS			
83	141 2 385T 02200	Bracket, Microphone	2
84	141 2 511T 15300	Pointer	1
85	**141 0 146T 19503**	Dial Scale Assy	1
ELECTRICAL PARTS			
105	4 612T 12000	Pilot Lamp	1
106	4 231T 79600	Switch, Dial	1
107	4 151T 28500	Speaker, Woofer 16cm	2
108	**4 151T 33100**	Speaker, Tweeter 5cm	2
109	4 511T 10700	Meter, VU	1
110	4 511T 10771	Meter, VR/Battery	1
111	4 235T 56200	Socket, 9P	1
112	**4 251T 94700**	Power Trans	1
113	4 153T 10500	Microphone	2
114	4 243T 12807	Lead, (–)	1
115	4 243T 12808	Lead, (+)	1
116	141 2 464T 08700	Fixer	3
117	4 244T 03200	Telescopic Rod Antenna	1
118	4 235T 34600	Socket, Rod Antenna	1
119	**4 257T 30801**	Antenna Coil Assembly	1
120	141 2 382T 11000	Terminal, Clock	1
121	4 235T 58900	Socket, Clock 12P	1
126	**4 970T 00271**	LCD	1
127	4 400T 03100	Connector	2
128	4 243T 12803	Lead, Yellow	1
129	4 612T 11001	Lamp Assembly	1
130	**4 960T 00200**	Bias Plate	1
131	**4 235T 33200**	Socket, AC Select	1
132	4 236T 09905	Plug Assy	1
133	141 2 382T 03100	Terminal	3
134	4 224R 20700	Fine Tuning	1
136	4 237T 05800	Lug	1
137	4 252T 06600	Choke Coil	1
138	4 234T 04700 4 234T 04711	) or Fuse 1.4A	1
139	141 2 464T 20673	Fixer	2
140	4 235T 56500	Socket	1
141	4 231R 14500	Slide Switch (S102)	1
142		Resistor, Carbon 1.8M ohm ±10% 1/4W	1
HARDWERE			
201		Pan Head Screw, 3x6mm	6
202		Flat Head Screw, 2.6x4mm	2
203		Tapping Screw, 3x8mm	10
204		Tapping Screw, 3x10mm	14
205		Pan Head Screw 2x6mm	2
206		Tapping Screw, 3x16mm	5
207		Tapping Screw, 3x18mm	2
208		Tapping Screw, 3x20mm	6
209		Tapping Screw, 3x25mm	3
210		Tapping Screw, 3x45mm	6
211		Nut, 3mm	2
212		Hexagon Bolt, 2.6x12mm	1
213		Washer, 3x8x0.5mm	1
214		Washer, 3x8x1mm	1
215		Washer, 3x10x0.5mm	3
216		Washer, 3x16x1mm	2
217		External "E" Ring, 2mm	2
219		Fiber Washer, 3x12x1mm	2
220		Tapping Screw 1.4x5mm	4
221		Pan Head Screw with Spring Washer, 3x4mm	1
222		Tapping Screw with Washer, 3x6mm	5
223		Tapping Screw with Washer, 3x8mm	8
224		Tapping Screw with Washer, 3x12mm	2
225		Tapping Screw with Washer, 3x14mm	2
226		Tapping Screw with Washer, 3 x 10mm	2
227		External Tooth Lock Washer, 3mm	2

Key No.	Part No.	Description	Q'ty
VOLUME PCB ASS'Y			
101	141 4 230T 73100	P.C. Board Assembly, Volume	1
	4 222T 67200	Variable Resistor, Volume	1
	4 222T 67300	Variable Resistor, Bass/Treble	2
		RESISTORS	
R842,942		Carbon 10K ohm ±10% ¼W	2
R845,945		Carbon 2.2K ohm ±10% ¼W	2
R844,944		Carbon 1.5K ohm ±10% ¼W	2
		CAPACITORS	
C835,935		AL Electrolytic 0.33μF 16V +40–20%	2
C832,932 836,936		Mylar 0.068μF 50V ±20%	4
C834,934		Mylar 0.022μF 50V ±20%	2
C833,933		Mylar 0.01μF 50V ±20%	2
C837,937		Ceramic 0.0022μF 50V ±10%	2
AMP PCB ASS'Y			
102	141 4 230T 72973	P.C. Board Assembly, AMP	1
	141 2 464T 08700	Fixer	8
	4 231T 74300	Switch, Mono-Stereo/Side-Auto	2
	4 231T 74400	Switch, Nor-FeCr-Cr	1
	4 231T 74500	Switch, Tape-Radio-Sleep	1
	4 231T 74600	Switch, R/P	1
	4 231T 65200	Switch, Beat	1
	4 231T 79800	Switch, Sleep Time Set	1
	4 235T 33300	Socket, 5P DIN	1
	4 235T 38000	Socket, Ext. SP, Microphone	3
SVR701 702	4 222T 39578	Volume	3
	4 253T 01015	Filter	2
	4 253T 04200	Filter	1
	4 258T 07100	OSC Coil	1
	4 236T 10576	Plug 9P	1
	4 235T 37900	Socket, Microphone	1
	4 235R 15700	Socket, Remote	1
	123 2 411R 10900	Plate Nut, Remote	1
	4 252T 06700	Choke	1
	4 236T 10279	Plug, 12P	1
	141 2 464T 24100	Fixer	1
	141 2 368T 19500	Heat Sink	1
IC801, 901		IC BA532 S2	2
Q802,902		Transistor 2SC1571 or 2SC693	2
Q801,901		Transistor 2SC1740	2
Q804,904 806,906		Transistor 2SC536	4
Q803,903 805,905		Transistor 2SC536 or 2SC945	4
Q703		Transistor 2SA608	1
Q704,705		Transistor 2SD612	2
Q701		Transistor 2SB187	1
Q702,706		Transistor 2SC945	2
D701,702 802,902 703,704		Diode DS442	6
D803,903 804,904		Diode 1S188 AM	4
D709,711 712,801 901,717 708,710 713,716 718		Diode DS442	11
D715		Diode MA26 W	1
D719		Zener Diode BZ061 JRC	1

Key No.	Part No.	Description	Q'ty
AMP PCB ASS'Y			
		RESISTOR	
R803,903		Carbon 10K ohm ±10% ¼W	2
R809,909, 859,959		Carbon 1M ohm ±10% ¼W	4
R806,906		Carbon 820K ohm ±10% ¼W	2
R818,918		Carbon 270K ohm ±10% ¼W	2
R839,939		Carbon 470K ohm ±10% ¼W	2
R817,917		Carbon 220K ohm ±10% ¼W	2
R824,924 850,950		Carbon 270K ohm ±10% ¼W	4
R816,916 831,931		Carbon 220K ohm ±10% ¼W	4
R813,913 836,936 749,706		Carbon 100K ohm ±10% ¼W	6
R849,702 703,704		Carbon 82K ohm ±10% ¼W	4
R751		Carbon 56K ohm ±10% ¼W	1
R812,912 823,923 748		Carbon 47K ohm ±10% ¼W	5
R953,747		Carbon 39K ohm ±10% ¼W	2
R822,922		Carbon 27K ohm ±10% ¼W	2
R808,908		Carbon 22K ohm ±10% ¼W	2
R841,941		Carbon 18K ohm ±10% ¼W	2
R827,927, 860,960		Carbon 12K ohm ±10% ¼W	4
R826,926 851,951 712,714		Carbon 10K ohm ±10% ¼W	6
R754		Carbon 100K ohm ±10% ¼W	1
R360		Carbon 390K ohm ±10% ¼W	1
R949		Carbon 82K ohm ±10% ¼W	1
R820,920		Carbon 150K ohm ±10% ¼W	2
R814,914		Carbon 8.2K ohm ±10% ¼W	2
R804,904 805,905 718		Carbon 6.8K ohm ±10% ¼W	5
R811,911 726,727 709		Carbon 4.7K ohm ±10% ¼W	5
R724,852 952		Carbon 3.9K ohm ±10% ¼W	3
R819,919 708,722		Carbon 3.3K ohm ±10% ¼W	4
R801,901 821,921 725,705		Carbon 2.2K ohm ±10% ¼W	6
R825,925		Carbon 1.5K ohm ±10% ¼W	2
R802,902		Carbon 1.2K ohm ±10% ¼W	2
R833,933 835,935 707		Carbon 1K ohm ±10% ¼W	5
R828,928		Carbon 820 ohm ±10% ¼W	2
R717		Carbon 470 ohm ±10% ¼W	1
R846,946		Carbon 390 ohm ±10% ¼W	2
R830,930 710,711 713		Carbon 330 ohm ±10% ¼W	5
R720		Carbon 270 ohm ±10% ½W	1
R834,934		Carbon 120 ohm ±10% ¼W	2
R716		Carbon 82 ohm ±10% 1W	1
R807,907 832,932 733		Carbon 56 ohm ±10% ¼W	5
R838,938		Carbon 33 ohm ±10% ¼W	2
R752		Carbon 330K ohm ±10% ¼W	1
R829,929		Carbon 5.6K ohm ±10% ¼W	2
R755		Carbon 270 ohm ±10% ½W	1
R715		Carbon 56 ohm ±10% 1W	1
R721		Carbon 180 ohm ±10% ½W	1
R810,910		Carbon 22 ohm ±10% ¼W	2
R728		Metal 10 ohm ±10% 3W	1
R723		Carbon 10 ohm ±10% ¼W	1
R719		Carbon 8.2 ohm ±10% ¼W	1
R10		Carbon 1M ohm ±10% ¼W	1
R840,940		Carbon 2.7K ohm ±10% ¼W	2

PARTS LIST

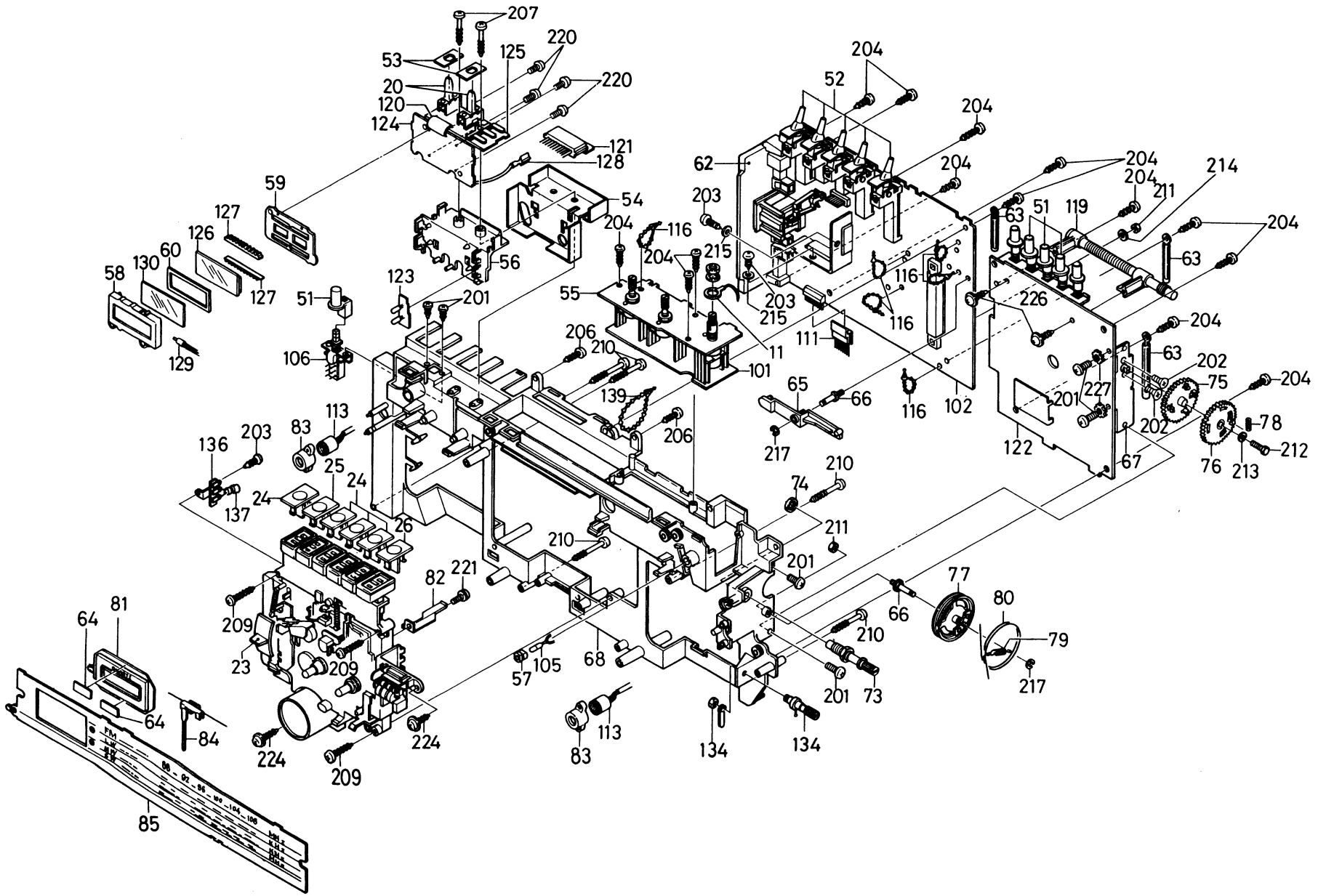
Key No.	Part No.	Description	Q'ty
AMP PCB ASS'Y			
		CAPACITORS	
C705		Electrolytic 2200μF 25V	1
C710		Electrolytic 2200μF 16V	1
C716		Electrolytic 1000μF 16V	1
C847,947		Electrolytic 1000μF 10V	2
C845,945		Electrolytic 470μF 10V	2
C708		Electrolytic 220μF 16V	1
C804,904		Electrolytic 220μF 10V	2
C849,949		Electrolytic 100μF 16V	2
C817,917		Electrolytic 100μF 10V	2
C714		Electrolytic 22μF 10V	1
C805,905		Electrolytic 4.7μF 25V	2
C838,938		Electrolytic 3.3μF 25V	2
C809,909 818,918		Electrolytic 1μF 25V	4
C820,920 824,924		Electrolytic 1μF 25V	4
C825,925 829,929		Electrolytic 1μF 25V	4
C826,926 831,931		Electrolytic 1μF 25V	4
C828,928		Electrolytic 470μF 16V	2
C707,729 841,941		Electrolytic 47μF 10V	4
C715,732		Electrolytic 33μF 10V	2
C840,940		Electrolytic 22μF 16V	2
C921		Ceramic 0.0047μF 50V ±10%	1
C815,915 839,939		Ceramic 0.001μF 50V ±10%	4
C731,730		Ceramic 0.001μF 50V ±10%	2
C811,911		Ceramic 680pF 50V ±10%	2
C851,951		Ceramic 470pF 50V ±10%	2
C843,943		Ceramic 270pF 50V ±10%	2
C933		Ceramic 220pF 50V ±10%	1
C806,906, C830,930, 854,954		Ceramic 100pF 50V ±10%	2
		Ceramic 82pF 50V ±10%	4
C807,907		Ceramic 180pF 50V ±10%	2
C711		Ceramic 150pF 50V ±10%	1
C803,903		Ceramic 0.0015μF 50V ±10%	2
C813,913		Ceramic 0.0039μF 50V ±10%	2
C801,901		AL Electrolytic 0.22μF 16V +40–20%	2
C823,923 808,908		AL Electrolytic 0.1μF 16V +40–20%	4
C802,902		AL Electrolytic 0.1μF 16V +40–20%	2
C848,948		Mylar 0.15μF 50V ±20%	2
C846,946		Mylar 0.1μF 50V ±20%	2
C819,919		Mylar 0.039μF 50V ±20%	2
C812,912		Mylar 0.022μF 50V ±20%	2
C713		Mylar 0.022μF 50V ±20%	1
C822,922		Mylar 0.012μF 50V ±20%	2
C814,914		Mylar 0.0082μF 50V ±20%	2
C712		Mylar 820pF 50V ±20%	1
C821		Ceramic 0.0033μF 50V ±10%	1
C860,960		Ceramic 330pF 50V ±10%	2
POWER SOURCE PCB ASS'Y			
103	141 4 230T 87400	P.C. Board Assembly Power Source	1
	4 235T 35900	Socket AC/DC	1
	141 2 135T 44900	Cover	1
	4 243T 12806	Lead Assembly, Orange & Blue	2
	141 2 381T 04200	Bracket, Fuse	2
D706,707 713,714		Diode IN4001	4
C701,702 703,704		Ceramic Cap. 0.022μF 50V +80–20%	4
HEADPHONE PCB ASS'Y			
104	141 4 230T 73200	P.C. Board Assembly Headphone	1
	4 235T 50100	Socket	1
R848,948		Carbon Res 100 ohm ±10% ½W	2
C850,950		Electrolytic Cap 10μF 16V Nonpolar	2

Key No.	Part No.	Description	Q'ty
TUNER PCB ASS'Y			
122	141 4 230T 82871	P.C. Board Assy. Tuner	1
VC-1,2, 3,4	4 224T 09400	Variable Capacitor	1
CT5,8	4 224T 07300	Trimmer 30pF	2
CT3,4, 6,7	4 224R 11671	Trimmer 10pF	4
CT1,2	4 224T 11600	Trimmer	2
L105	4 257T 10731	Antenna, SW	1
L109	4 258T 08340	OSC Coil, SW	1
L110	4 258T 22940	OSC Coil, MW	1
L111	4 258T 22730	OSC Coil, LW	1
L112	4 265R 05000	VHF Coil	1
L101	4 265R 12000	VHF Coil	1
L102	4 265R 12600	VHF Coil	1
L103	4 265T 51310	VHF Coil, FM OSC	1
T301	4 256R 20831	IFT	1
T302	4 256R 02131	IFT	1
T303	4 256R 15131	IFT	1
T304	4 256R 02331	IFT	1
T305,306	4 256R 00131	IFT	2
T307	4 256R 00231	IFT	1
CF-301	4 256T 80400	IF. Filter 10.7M Red	1 or
	4 256T 80471	IF. Filter 10.6M Blue	
	4 256T 80472	IF. Filter 10.73M Orange	
	4 256T 80473	IF. Filter 10.64M Black	
	4 256T 80474	IF. Filter 10.76M Whit	
L104	4 253T 10804	Filter	1
L107	4 253T 10814	Filter	1
S101	4 231T 77500	Switch	1
B101	123 2 471R 10900	Core	1
B102	123 2 471R 10400	Core	1
CR501, 502	4 227T 02300	CR Pack	2
R360, 509	4 222T 39475	Semifixed Variable Resistor 10K-B	2
R508	4 222T 39476	Semifixed Variable Resistor 20KB	1
	141 2 322T 18900	Shield Plate	1
	141 2 322T 18100	Shield Plate	1
	4 253T 08700	Filter, FM RF	1
IC501		IC AN7410	1
Q103		Transistor 2SC930	1
Q101		Transistor 2SC930	1
Q102,104		Transistor 2SC930 Conv	2
Q301,303		Transistor 2SC930 IF	2
Q302,304		Transistor 2SC930 IF	2
Q350,351, 352,353		Transistor 2SC536	4
D103		Diode SD115 or 1S553 or 1S188	1
D352,303		Diode 1S188 FM1 or 1N60 FM	2
D101,102, 104,105		Diode 1S2473	4
D350,351, 352,353		Diode 1S2473	4
D106,107, 301,304		Diode 1S2473 or DS442X	4
D108,109		Diode 1S2473 or DS442X	2
D305		Diode MV-11T	1
D306		Diode YZ060	1
		RESISTORS	
R121		Carbon 10 ohm ±10% ¼W	1
R118		Carbon 10 ohm ±10% ¼W	1
R301,303, 108		Carbon 100 ohm ±10% ¼W	3
R316		Carbon 150 ohm ±10% ¼W	1
R328,514		Carbon 180 ohm ±10% ¼W	2
R115		Carbon 220 ohm ±10% ¼W	1
R112		Carbon 270 ohm ±10% ¼W	1
R307,309		Carbon 330 ohm ±10% ¼W	2
R351		Carbon 390 ohm ±10% ¼W	1
R510		Carbon 820 ohm ±10% ¼W	1
R105		Carbon 1.5K ohm ±10% ¼W	1
R322,324, 511,502		Carbon 1K ohm ±10% ¼W	4
R315,109, 111		Carbon 1.2K ohm ±10% ¼W	3
R107		Carbon 2.2K ohm ±10% ¼W	1
R306,515, 516		Carbon 2.2K ohm ±10% ¼W	3

PARTS LIST

Key No.	Part No.	Description	Q'ty
TUNER PCB ASS'Y			
		RESISTORS	
R117		Carbon 1K ohms ±10% ¼W	1
R506,507, 123		Carbon 5.6K ohm ±10% ¼W	3
R323		Carbon 6.8K ohm ±10% ¼W	1
R358		Carbon 10K ohm ±10% ¼W	1
R106,302, 112,305		Carbon 15K ohm ±10% ¼W	4
R327		Carbon 10K ohm ±10% ¼W	1
R503		Carbon 18K ohm ±10% ¼W	1
R120		Carbon 22K ohm ±10% ¼W	1
R512		Carbon 27K ohm ±10% ¼W	1
R501,312		Carbon 47K ohm ±10% ¼W	2
R325,356, 357,332		Carbon 100K ohm ±10% ¼W	4
R326		Carbon 220K ohm ±10% ¼W	1
R350		Carbon 270K ohm ±10% ¼W	1
R359		Carbon 330K ohm ±10% ¼W	1
R113		Carbon 33 ohm ±10% ¼W	1
R330		Carbon 56 ohm ±10% ¼W	1
R104		Carbon 100 ohm ±10% ¼W	1
R317		Carbon 270 ohm ±10% ¼W	1
R304,308		Carbon 330 ohm ±10% ¼W	2
R318,319		Carbon 1K ohm ±10% ¼W	2
R116		Carbon 3.3K ohm ±10% ¼W	1
R320,321		Carbon 5.6K ohm ±10% ¼W	2
R110		Carbon 15K ohm ±10% ¼W	1
R353		Carbon 47K ohm ±10% ¼W	1
R314		Carbon 56K ohm ±10% ¼W	1
R313		Carbon 270K ohm ±10% ¼W	1
R331		Carbon 330K ohm ±10% ¼W	1
R311		Carbon 150 ohm ±10% ¼W	1
R517		Carbon 2.2K ohm ±10% ¼W	1
R103		Carbon 33 ohm ±10% ¼W	1
R310		Carbon 680 ohm ±10% ¼W	1
R329		Carbon 8.2K ohm ±10% ¼W	1
R352		Carbon 820 ohm ±10% ¼W	1
R124		Carbon 10K ohm ±10% ¼W	1
R102		Carbon 15K ohm ±10% ¼W	1
R101		Carbon 470 ohm ±10% ¼W	1
R114		Carbon 1.5K ohm ±10% ¼W	1
		CAPACITORS	
C311		Ceramic 1pF 50V ±0.25pF	1
C316,331, 350		Ceramic 2pF 50V ±0.25pF	3
C127		Ceramic 3pF 50V ±0.25pF	1
C106,113		Ceramic 4pF 50V ±0.25pF	2
C351		Ceramic 5pF 50V ±0.25pF	1
C130		Ceramic 3pF 50V ±0.25pF	1
C110,118		Ceramic 10pF 50V ±10%	2
C112		Ceramic 12pF 50V ±10%	1
C119		Ceramic 15pF 50V ±10%	1
C105		Ceramic 18pF 50V ±10%	1
C107,125		Ceramic 20pF 50V ±10%	2
C315		Ceramic 30pF 50V ±10%	1
C123		Ceramic 47pF 50V ±10%	1
C122		Ceramic 51pF 50V ±10%	1
C116,317, 325		Ceramic 100pF 50V ±10%	3
C134		Ceramic 180pF 50V ±5%	1
C320,321, 322,357		Ceramic 220pF 50V ±10%	4
C108		Ceramic 330pF 50V ±10%	1
C136		Ceramic 100pF 50V ±10%	1
C137		Ceramic 10pF 50V ±10%	1
C352		Ceramic 0.001μF 50V ±10%	1
C102,103, 109,304, 310		Ceramic 0.01μF 50V +80–20%	5
C115,301, 302,305		Ceramic 0.022μF 50V +80–20%	4
C313,355, 354		Ceramic 0.022μF 50V +80–20%	3
C104,111		Ceramic 0.04μF 50V +80–20%	2
C312,326		BC CON 0.1μF 12V ±20%	2
C128		Mylar 0.0033μF 50V ±20%	1
C131,308		Mylar 0.0047μF 50V ±20%	2

Key No.	Part No.	Description	Q'ty
TUNER PCB ASS'Y			
		CAPACITORS	
C117,124, 314		Mylar 0.01μF 50V ±20%	3
C324,332		Mylar 0.01μF 50V ±20%	2
C508,509		Mylar 0.012μF 50V ±20%	2
C135,303, 323		Mylar 0.022μF 50V ±20%	3
C353,356		Mylar 0.022μF 50V ±20%	2
C318,327, 502		Mylar 0.047μF 50V ±20%	3
C306		Mylar 0.022μF 50V ±20%	1
C514,329, 333		Electrolytic 1μF 16V	3
C309,319, 501		Electrolytic 4.7μF 10V	3
C328		Electrolytic 470μF 10V	1
C512		Electrolytic 2200μF 16V	1
C358,510, 511		AL Electrolytic 0.1μF 10V +40–20%	3
C504		AL Electrolytic 0.22μF 10V +40–20%	1
C503,506		AL Electrolytic 0.47μF 10V +40–20%	2
C132		Styrol 250pF 50V ±5%	1
C507		Styrol 470pF 50V ±5%	1
C129		Styrol 340pF 50V ±5%	1
C126		Styrol 0.0036μF 50V ±5%	1
LED PCB ASS'Y			
123	141 4 230T 82900	P.C. Board Assembly, LED	1
D501		LED SLP-131B-A or B or C Red	1
D354		LED SLP231B GR	1
CLOCK PCB ASS'Y			
124	141 4 230T 71571	P.C. Board Assembly, Clock	1
R1,2,3 4,5	4 221T 02700	Resistor	1
X1	4 225T 01671	Crystal	1
CT-1	4 224T 12100	Trimmer	1
IC-1		LSI μPD 833GN	1
		CAPACITORS	
C2,4		Tantal 0.22μF 10V ±20%	2
C3,7,8,11		Ceramic 0.001μF 50V ±10%	4
C1		BC CON 0.1μF 12V +40–20%	1
C6		Ceramic 22pF 50V ±10%	1
C10		Ceramic 5pF 50V ±0.5pF	1
C5		Ceramic 0.0047μF 50V +80–20%	1
		RESISTORS	
R9		Mini Carbon 1M ohm ±10% 1/8W	1
R6,7,8		Mini Carbon 1M ohm ±10% 1/8W	3
CLOCK SWITCH PCB ASS'Y			
125	141 2 230T 71600	P.C. Board Assembly, Clock	1
S5	4 231T 47800	Special Switch	1
S4-1 4-2	4 231T 47700	Switch	1
	141 2 382T 11100	Terminal	1
	141 2 467T 01604	Rivet, 2x3	3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202
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113
83
136
203
25
24
137
24
26
74
210
211
210
201
82
221
77
80
66
64
81
209
23
209
68
57
105
210
79
217
201
73
64
84
224
224
209
113
83
134
134
85

PARTS LIST

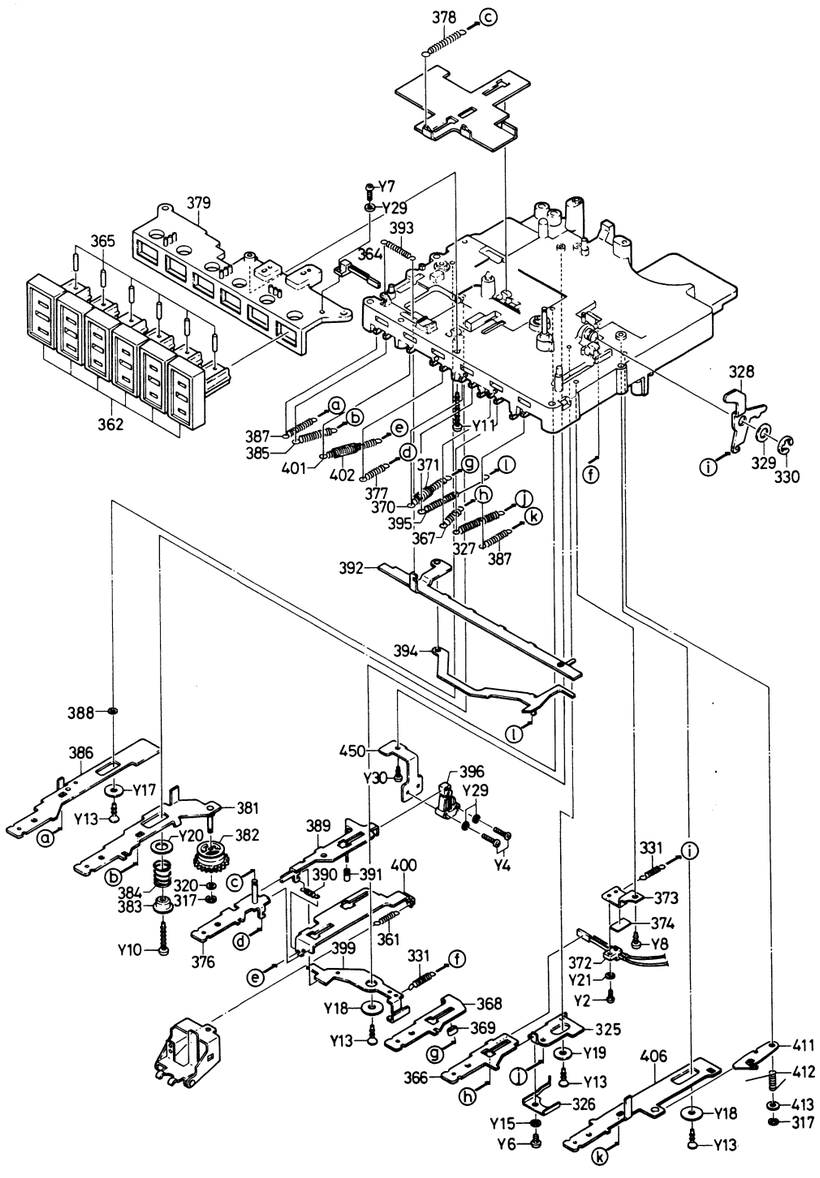
Key No.	Part No.	Description	Q'ty
MECHANISM			
301	141 0 311T 26220	Chassis Assy	1
302	141 2 731T 37502	Slide, Head	1
303	141 2 821T 10700	Tape Guide	1
304	141 2 852T 43700	Spring Wire, Pinch Roller	1
305	141 2 853T 46901	Spring Plate, Cassette plase	1
306	141 2 375T 06900	Bracket, Head	1
307	4 242T 21671	R/P Head	1
308	4 242T 19500	E Head	1
309	141 2 851T 82700	Spring Coil, R/P Head	1
310	**141 2 421T 28000**	**Special Screw, Pan Head Screw with Spring Washer 2x11.5mm**	2
311	123 2 472R 00200	Lug	1
312	141 2 472T 05900	Lug	2
313	141 2 490T 00600	Tube	2
314	141 2 345T 00400	Steel Ball	4
315	141 2 853T 53200	Spring Plate	1
316	141 0 545T 04720	Lever Pinch Roller (141-0-545T-02900)	1
317	141 2 457T 23000	Special Washer	4
318	141 0 521T 09300	Flywheel Assy	1
319	141 2 457T 04300	Special Washer	1
320	141 2 453T 30201	Washer 2.5x5x0.25 Nylon	3
321	141 2 453T 30202	Washer 2.6x4.7x0.5 Nylon	1
322	141 0 524T 07800	Bracket Flywheel Assy	1
323	141 2 683T 22800	Ring	1
324	123 2 472R 00400	Lug	2
325	141 2 742T 08201	Lever	1
326	141 2 853T 52900	Spring Plate	1
327	141 2 851T 80100	Spring Coil	2
328	141 2 741T 96400	Lever	1
329	141 2 453T 30802	Washer 6.2x9.5x0.5 Nylon	1
330	141 2 457T 23200	Special Washer	1
331	141 2 851T 56100	Spring Coil	3
332	4 527T 10271	Motor	1
333	141 2 661T 72500, 141 2 661T 72501, 141 2 661T 72502	**Pulley, Motor**	1
334	141 2 421T 12501	Special Screw, Motor	2
335	141 2 445T 07000	Rubber Cushion, Motor	2
336	141 2 447T 36000	Cushion, Motor	2
337	141 2 564T 19800	Square Belt Main	1
338	141 2 564T 19700	Belt	1
339	141 2 464T 08700	Fixer	1
342	141 0 661T 22701	Pulley Assy, Supply (141-0-661T-02400)	1
343	141 2 531T 10101	Reel Plate, Supply	1
344	141 2 457T 11000	Special Washer	4
345	141 2 457T 23700	Special Washer	2
346	141 2 853T 48000	Spring Plate, Back Tention	1
347	141 2 457T 06200	Special Washer, Back Tention	2
348	141 2 531T 10700	Reel Plate, Tack UP	1
349	141 2 661T 22901	Pully, Tack Up	1
350	141 2 452T 02300	Felt	1
351	141 2 661T 23001	Pulley, Tack Up	1
352	141 2 453T 31200	Washer 2x8.5x0.25 Poly	1
353	141 2 453T 30100	Washer 2.1x4x0.13 Nylon	2
354	141 2 453T 30101	Washer 2.1x4x0.25 Nylon	4
355	141 2 453T 32400	Washer 4.9x8x0.13 Nylon	1
356	141 2 453T 32401	Washer 4.9x8x0.25	1
357	141 2 445T 21200	Rubber Cushion	1
358	141 0 742T 07000	Lever Assy	1
361	**141 2 855T 28700**	**Spring Coil**	1
362	**141 2 161T 48801**	**Push Button**	6
364	4 231T 50900	Switch, Stand by	1
365	141 2 488T 01801	Pin	6
366	141 2 731T 55000	Slide, Stop Button	1
367	141 2 855T 29900	Spring Coil	1
368	141 2 731T 54300	Slide, FF Button	1
369	141 2 490T 00500	Tube	3
370	141 2 855T 29800	Spring Coil	1
371	141 2 490T 01100	Tube 5φx10mm	1
372	4 231T 68000	Switch	3
373	141 2 365T 37900	Bracket, Switch	1
374	141 2 352T 26900	Spacer	1
376	141 0 731T 54400	Slide Assy (141-0-731T-16300)	1

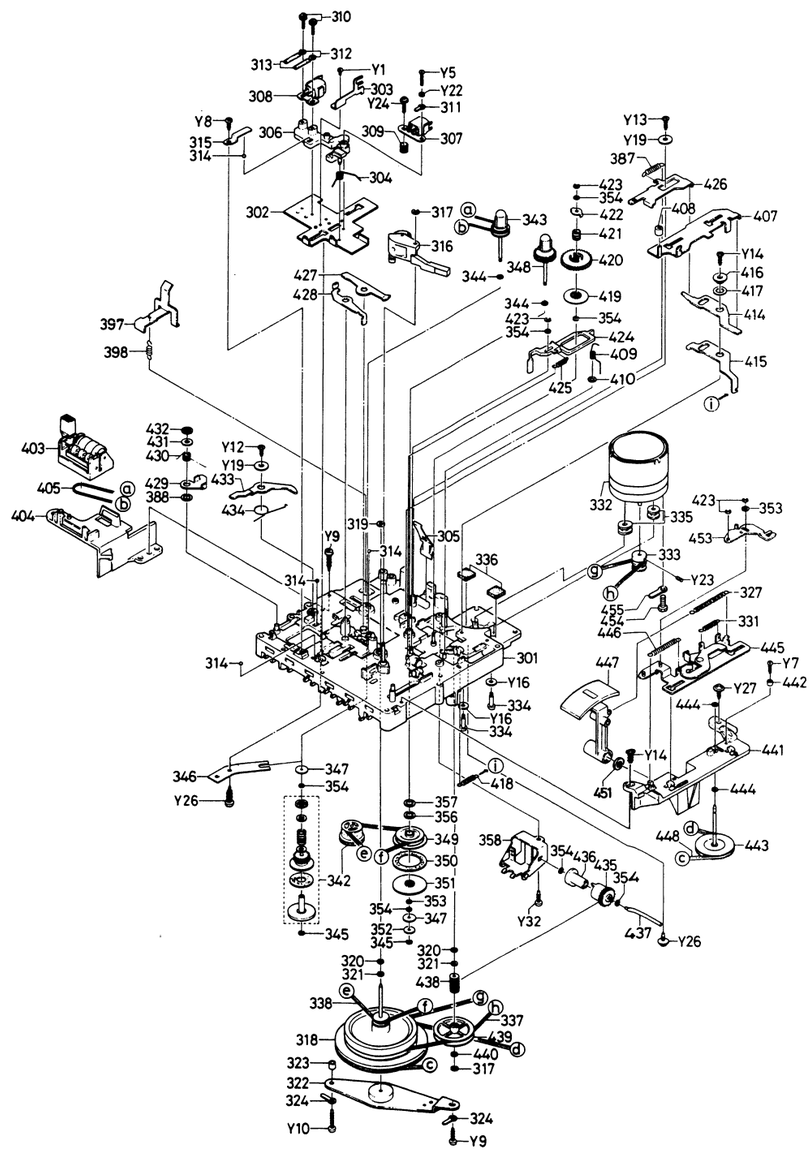
Key No.	Part No.	Description	Q'ty
MECHANISM			
377	141 2 855T 28800	Spring Coil	1
378	141 2 851T 96400	Spring Coil	1
379	141 2 351T 43300	Bracket Mounting	1
381	141 0 731T 54500	Side Assy, REW (141-0-731T-16400)	1
382	141 2 661T 22600	Pulley, REW	1
383	141 2 461T 30200	Pipe	1
384	141 2 851T 65600	Spring Coil	1
385	141 2 855T 17400	Spring Coil	1
386	141 2 731T 57800	Slide, REC	1
387	141 2 851T 93002	Spring Coil	3
388	141 2 453T 30700	Washer 5.2x8x0.13 Nylon	2
389	141 2 731T 43101	Slide	1
390	141 2 855T 00200	Spring Coil	1
391	141 2 490T 05000	Tube	6
392	141 0 731T 55100	Slide Assy, Button Lock (141 0 731T 16500)	1
393	141 2 851T 73800	Spring Coil	1
394	141 2 742T 07100	Lever	1
395	141 2 851T 91200	Spring Coil	1
396	4 231T 82600	Switch, Main	1
397	141 2 742T 12500	Lever	1
398	141 2 851T 87701	Spring Coil	1
399	**141 2 742T 08102**	Lever	1
400	141 2 731T 55300	Slide	1
401	141 2 855T 19600	Sprinc Coil	1
402	141 2 490T 00900	Tube	1
403	141 2 811T 06400	Counter	1
404	141 2 812T 07000	Bracket, Counter	1
405	141 2 564T 18200	Square Belt	1
406	141 0 731T 54900	Slide Assy, Pouse Button	1
407	141 2 731T 57600	Slide, Pouse	1
408	141 2 461T 30700	Pipe	1
409	141 2 852T 42800	Spring Wire	1
410	141 2 457T 10300	Special Washer 3.2x5.7x0.1	1
411	141 2 614T 05200	Lever Lock	1
412	141 2 852T 37900	Spring Wire	1
413	141 2 453T 01200	Washer 3x8x1	1
414	141 2 742T 07400	Lever, Pouse	1
415	141 2 742T 06900	Lever	1
416	141 2 461T 28700	Pipe	1
417	141 2 453T 30800	Washer 6.2x9.5x0.13 Nylon	1
418	141 2 855T 15100	Spring Coil	1
419	141 2 661T 24300	Pulley	1
420	141 0 581T 09000	Gear Assy	1
421	141 2 855T 16500	Spring Coil	1
422	141 2 858T 08100	Bracket, Spring	1
423	141 2 457T 23800	Special Washer	3
424	141 2 731T 53400	Slide, Auto Stop	1
425	141 2 855T 15400	Spring Coil	1
426	141 2 731T 54200	Slide, Rev	1
427	141 2 742T 07500	Lever, Rev	1
428	141 2 742T 07600	Lever, Cue	1
429	141 2 742T 07900	Lever, Rec	1
430	141 2 852T 45400	Spring Wire	1
431	141 2 453T 00800	Washer 3x8x0.5	1
432	141 2 457T 20100	Special Washer	1
433	141 2 742T 08000	Lever	1
434	141 2 852T 43300	Spring Wire	1
435	141 2 581T 09100	Gear, Auto Stop	1
436	141 2 661T 24400	Pulley, Auto Stop	1
437	141 2 753T 20800	Shaft	1
438	141 2 581T 01900	Gear	1
439	141 0 661T 25300	Pulley Assy	1
440	141 2 453T 30200	Washer 2.6x4.7x0.13 Nylon	2
441	141 0 312T 15300	Sub Chassis Assy	1
442	141 2 461T 32800	Pipe	1
443	141 0 661T 13200	Pully Assy	1
444	141 2 453T 30001	Washer 1.7x3.2x0.25	1
445	141 0 731T 57700	Slide Assy	1
446	141 2 851T 63800	Spring Coil	1
447	141 0 741T 12700	Lever Assy	1
448	141 2 564T 19500	Square Belt	1
449	141 2 322T 31401	Shield Plate	1
450	141 2 365T 41300	Bracket Switch	1
453	141 2 742T 22200	Lever	1
454	141 2 421T 22100	Special Screw, Motor	1
455	123 2 472R 00400	Lug, Motor	1

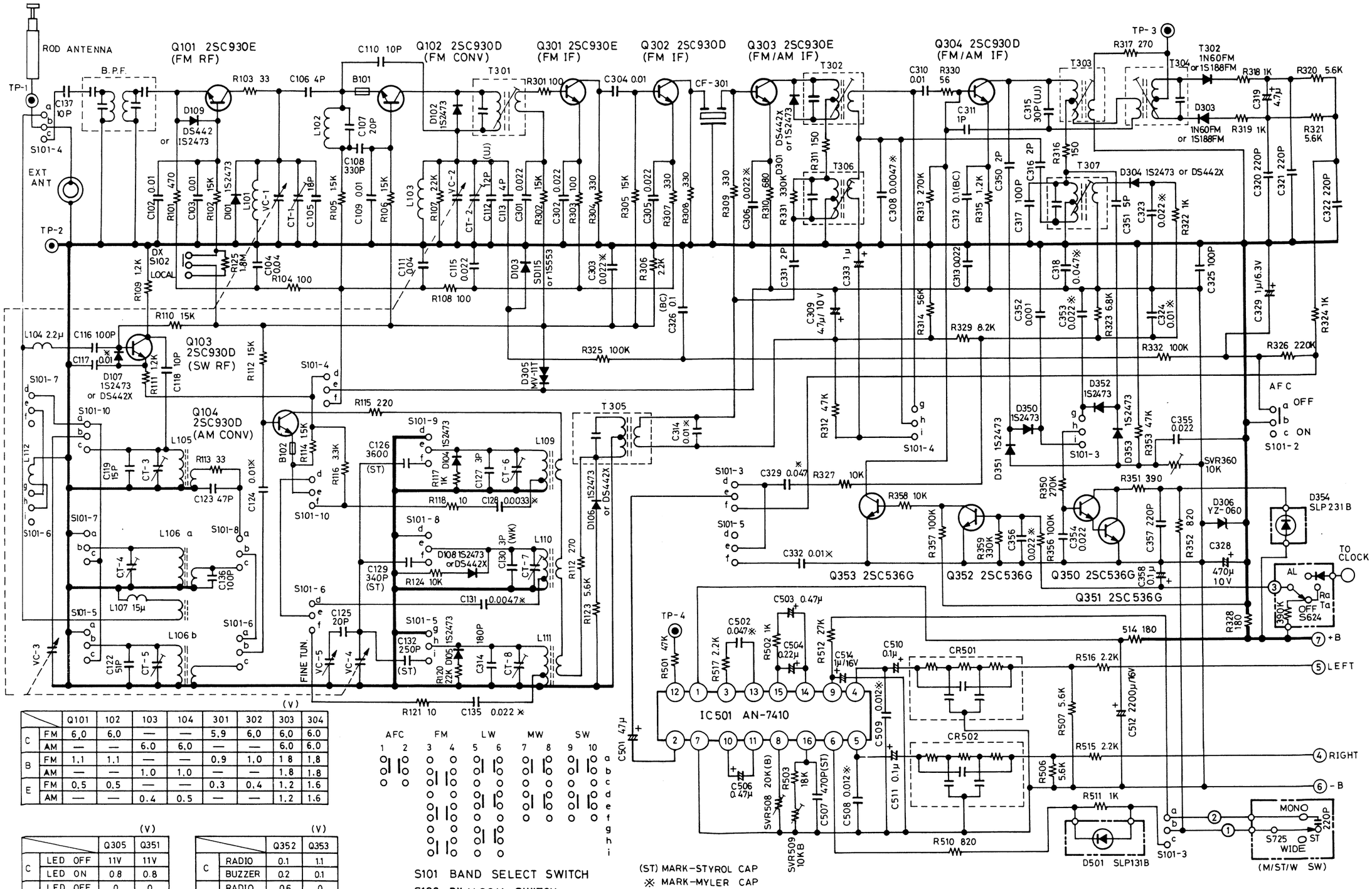
PARTS LIST

Key No.	Part No.	Description	Q'ty
MECHANISM SCREWS			
Y1		Pan Hd. Screw 2x2	1
Y2		Pan Hd. Screw 2x4	1
Y4		Pan Hd. Screw 2.6x6	1
Y5		Pan Hd. Screw 2x12	1
Y6		Pan Hd. Screw 2.6x4	1
Y7		Pan Hd. Tapping Screw 2.3x8	2
Y8		Pan Hd. Tapping Screw 3x6	3
Y9		Pan Hd. Tapping Screw 3x10	2
Y10		Pan Hd. Tapping Screw 3x14	2
Y11		Pan Hd. Tapping Screw 3x20	1
Y12		Flat Hd. Tapping Screw 3x6	1
Y13		Flat Hd. Tapping Screw 3x8	5
Y14		Flat Hd. Tapping Screw 3x10	2
Y15		Washer 2.6x5x0.5	1
Y16		Washer 3x8x0.5	2
Y17		Washer 3x10x1	1
Y18		Washer 3x12x1	2
Y19		Washer 4x10x0.8	3
Y20		Washer 6x11.5x0.8	1
Y21		Washer 2x4.8x0.3	1
Y22		Spring Washer 2	1
Y23		Head Less Screw 2x3	1
Y24		Pan Hd. Screw W/Washer 2x12	1
Y26		Pan Hd. Tapping Screw W/Washer 3x6	2
Y27		Pan Hd. Tapping W/Washer 3x10	1
Y29		Washer 2x4.3x0.3	1
Y30		Pan Hd. Tapping Screw 2.3x6	1
Y32		Pan Hd. Tapping Screw 3x8	1

EXPLODED VIEW (MECHANISM)







		Q101	102	103	104	301	302	303	304
C	FM	6.0	6.0	—	—	5.9	6.0	6.0	6.0
	AM	—	—	6.0	6.0	—	—	6.0	6.0
B	FM	1.1	1.1	—	—	0.9	1.0	1.8	1.8
	AM	—	—	1.0	1.0	—	—	1.8	1.8
E	FM	0.5	0.5	—	—	0.3	0.4	1.2	1.6
	AM	—	—	0.4	0.5	—	—	1.2	1.6

(V)

		Q305	Q351
C	LED OFF	11V	11V
	LED ON	0.8	0.8
B	LED OFF	0	0
	LED ON	0.6	0.7
E	LED OFF	0	0
	LED ON	0.7	0

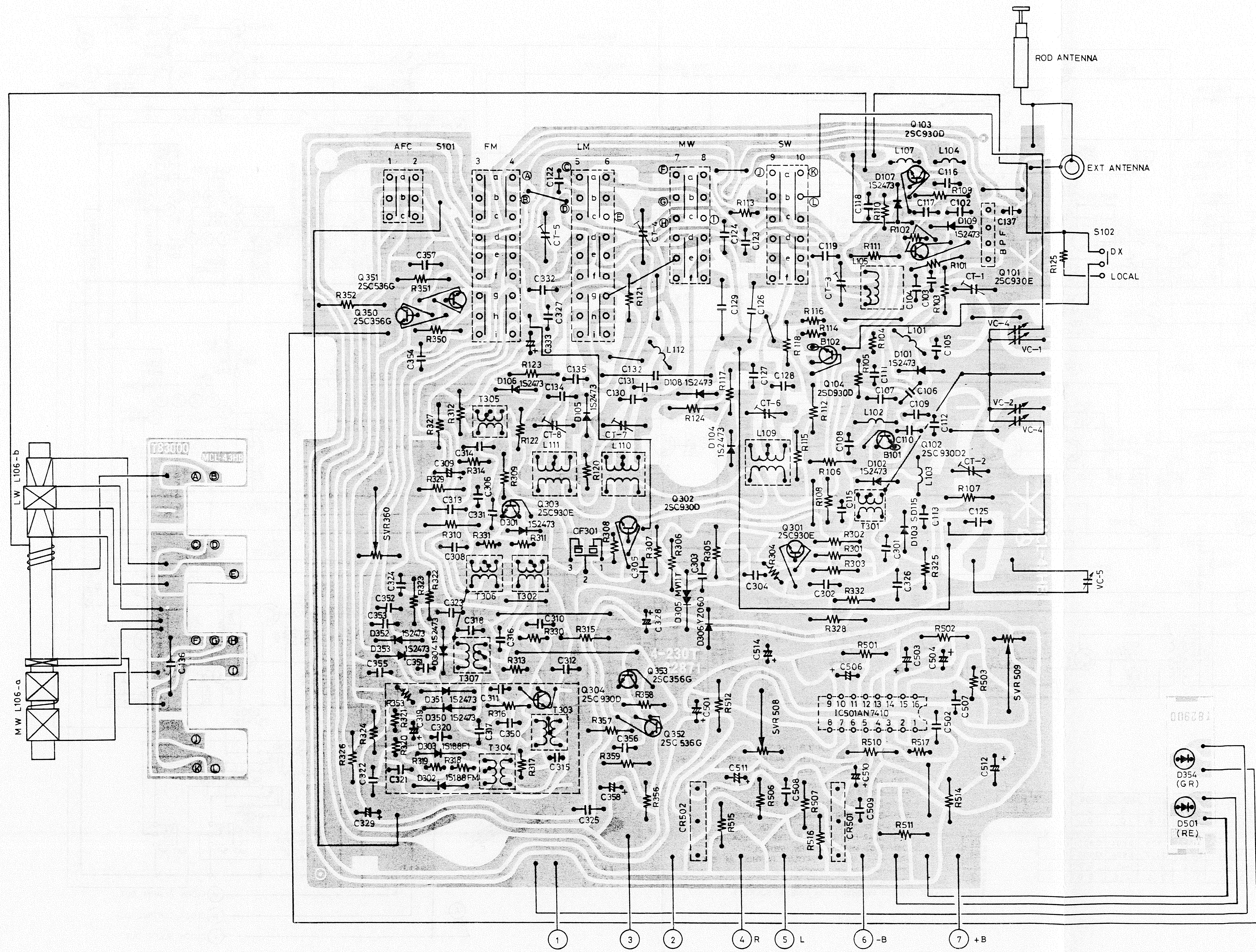
(V)

		Q352	Q353
C	RADIO	0.1	1.1
	BUZZER	0.2	0.1
B	RADIO	0.6	0
	BUZZER	0	0.1
E	RADIO	0	0
	BUZZER	0	0

AFC		FM		LW		MW		SW	
1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○
○	○		○	○	○	○	○	○	○
			○	○	○	○	○	○	○
			○	○	○	○	○	○	○
			○	○	○				
			○	○	○				
			○	○	○				
			○	○	○				

S101 BAND SELECT SWITCH
S102 DX / LOCAL SWITCH

(ST) MARK-STYROL CAP
※ MARK-MYLER CAP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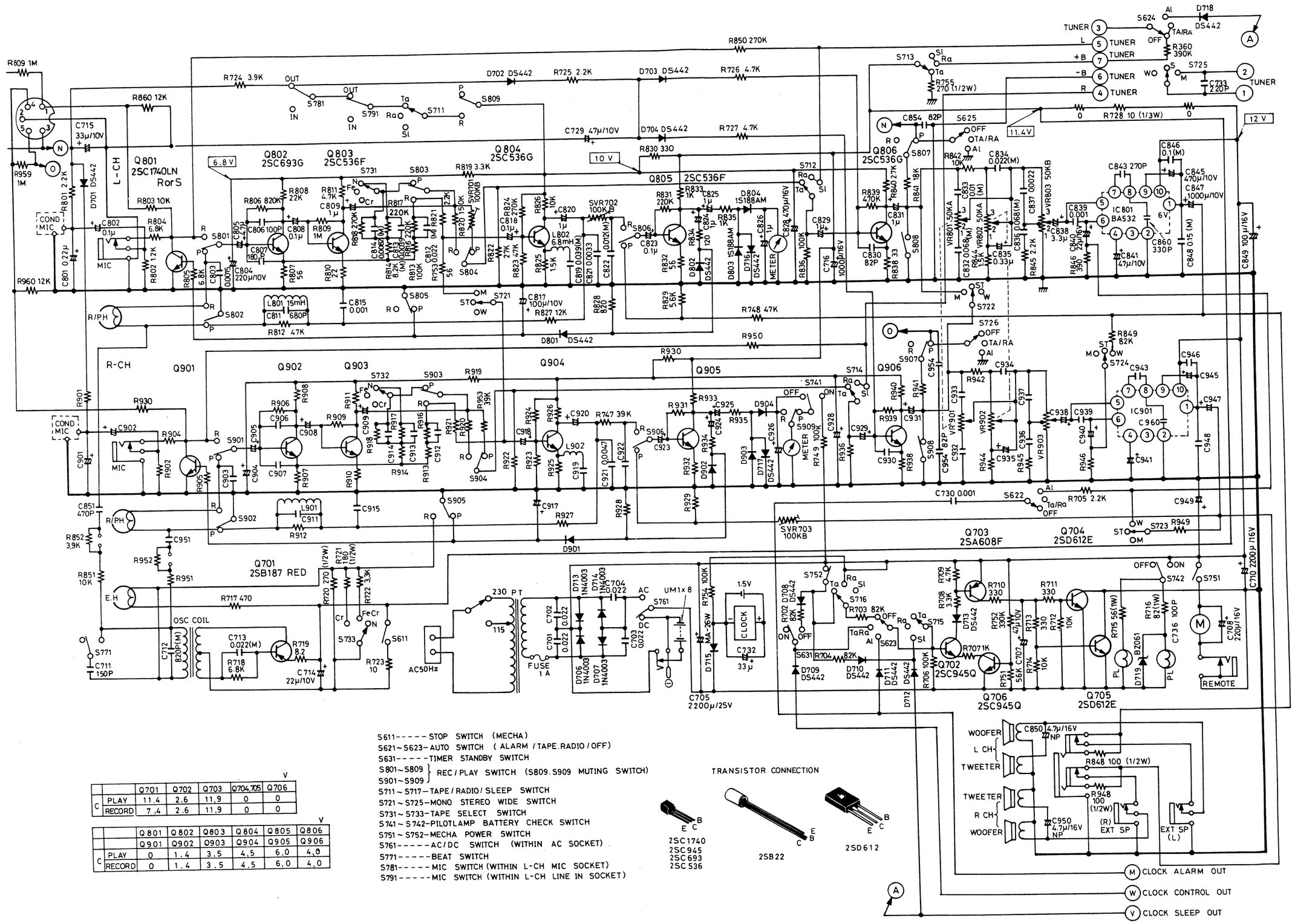
EXT ANTENNA
S102
DX
LOCAL
AFC
S101
FM
LM
MW
SW
Q103
2SC930D
Q101
2SC930E
Q102
2SC930D2
Q104
2SD930D
Q301
2SC930E
Q302
2SC930D
Q303
2SC930E
Q304
2SC930D
Q350
2SC356G
Q351
2SC536G
Q352
2SC536G
Q353
2SC356G
IC501AN7410
LW L106-b
MW L106-a
D354
(GR)
D501
(RE)
SVR508
SVR509
SVR360
CR501
CR502
1
2
3
4 R
5 L
6 -B
7 +B

SCHEMATIC DIAGRAM (AMPLIFIER)

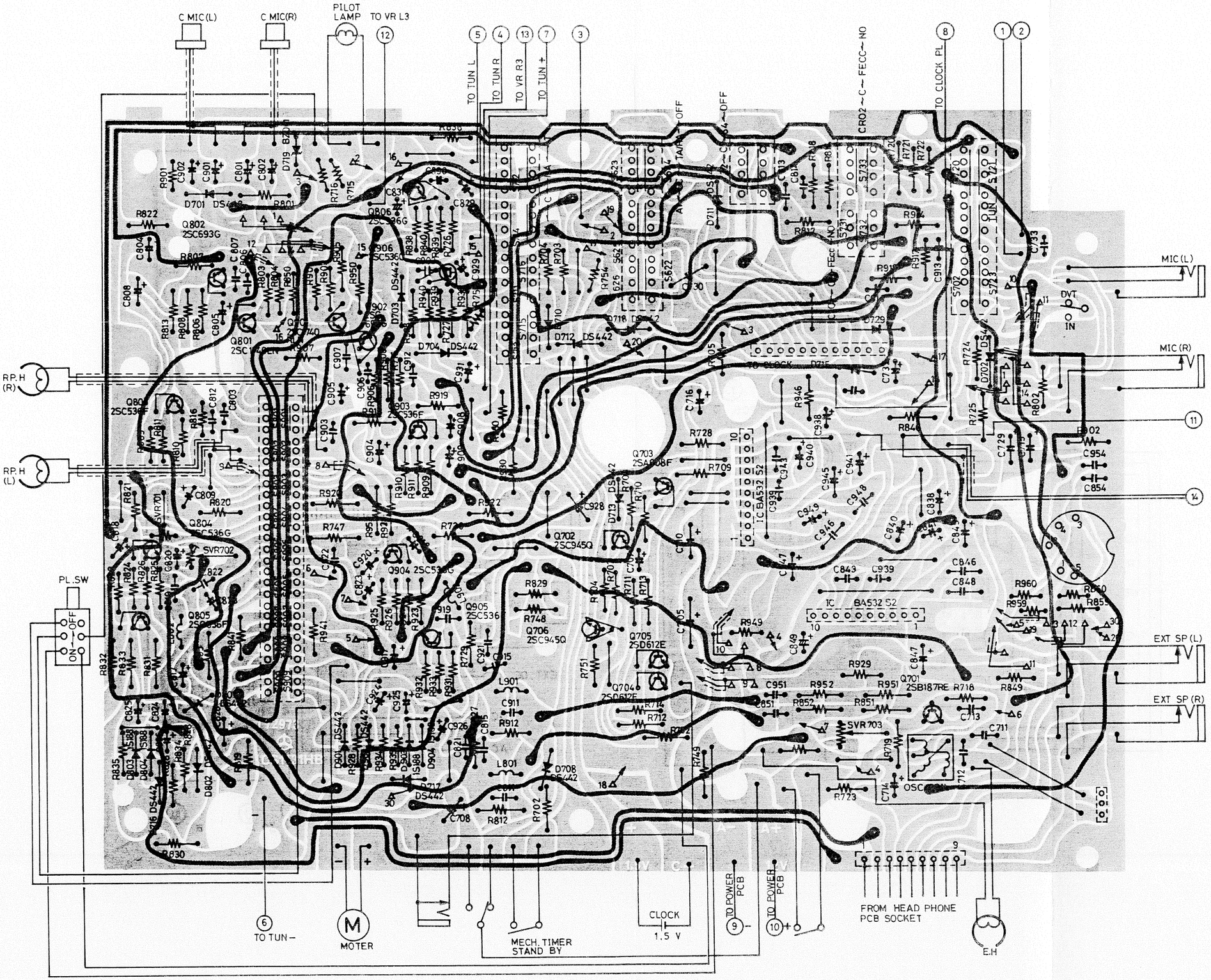


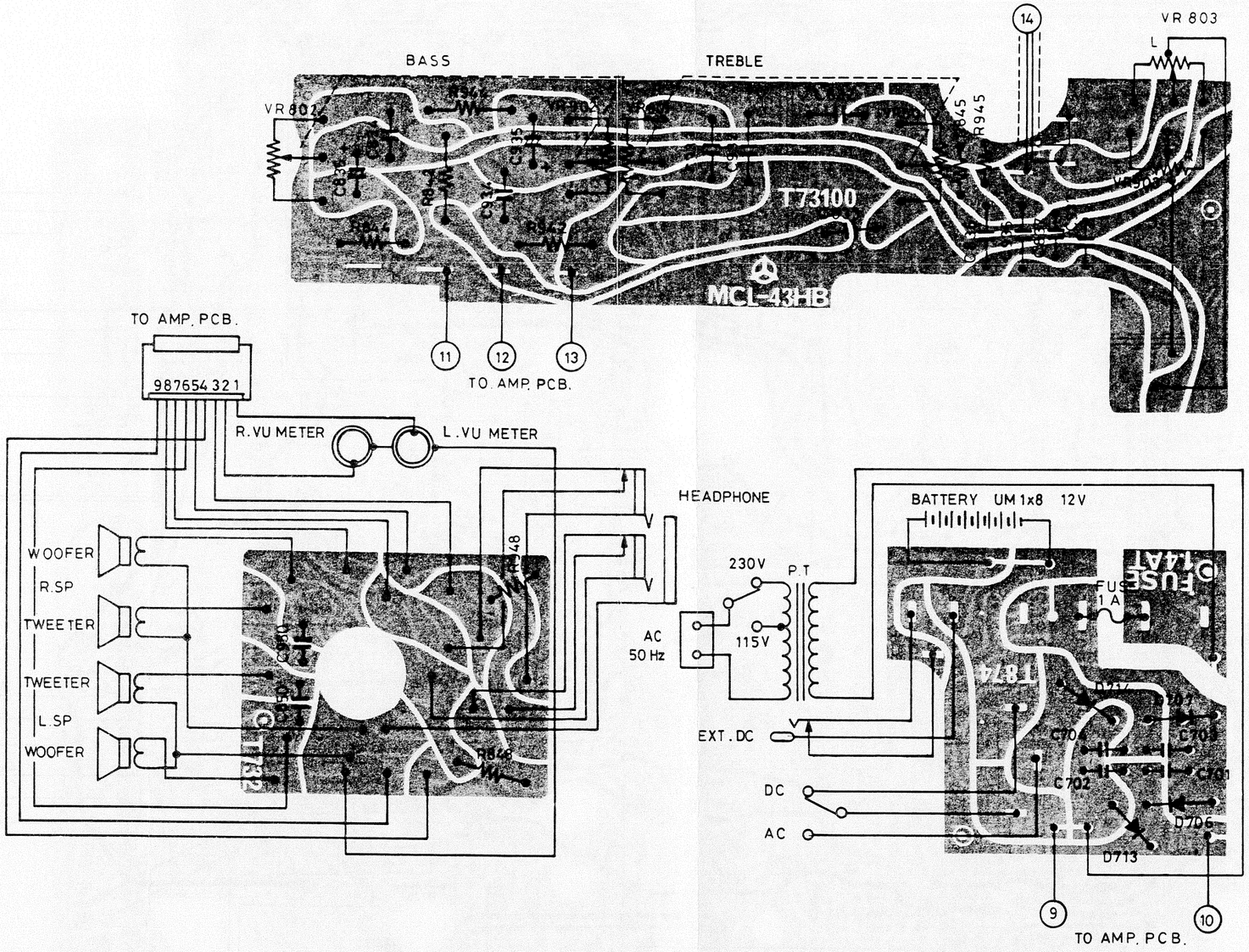
		Q701	Q702	Q703	Q704,705	Q706
						V
C	PLAY	11.4	2.6	11.9	0	0
	RECORD	7.4	2.6	11.9	0	0

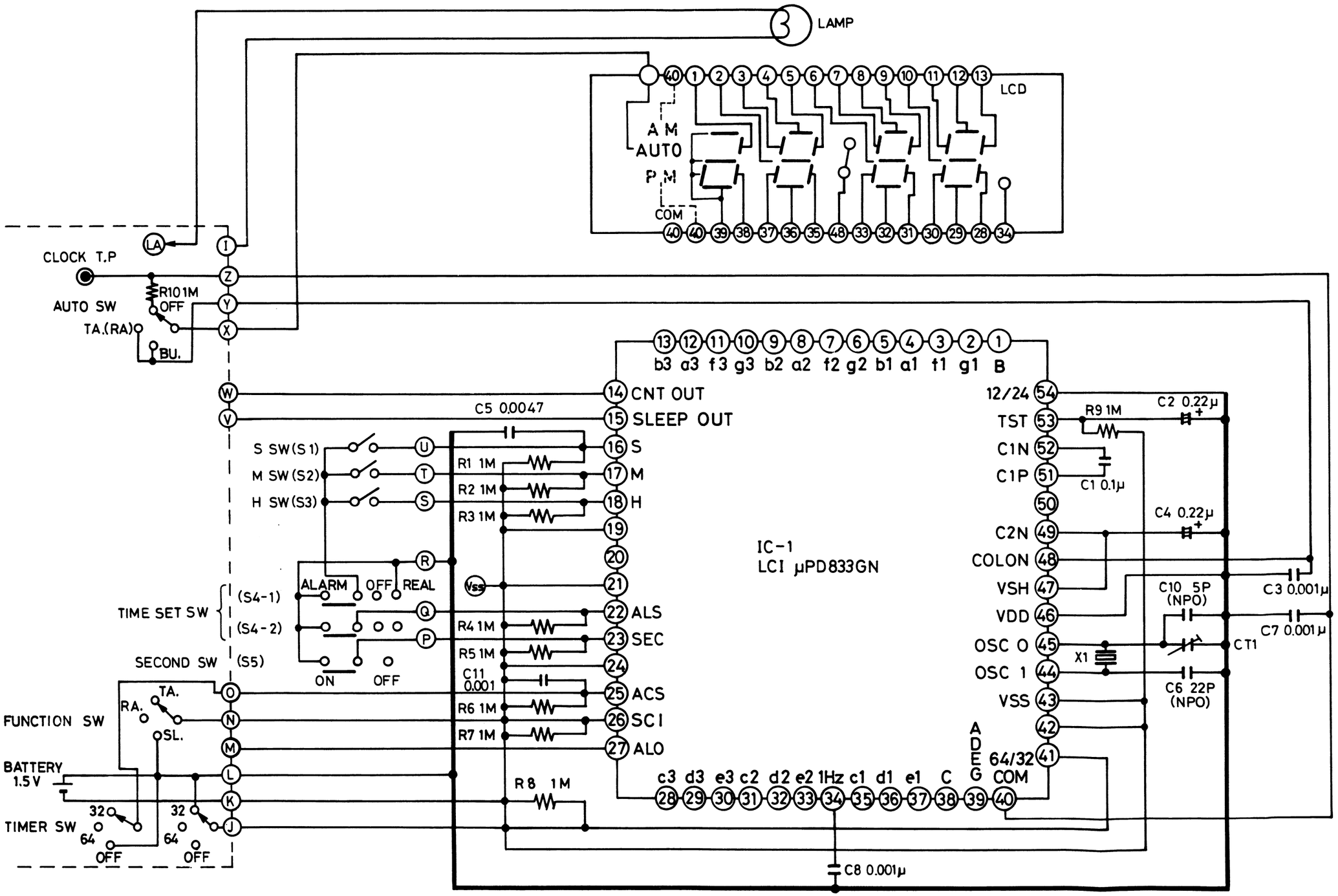
		Q801	Q802	Q803	Q804	Q805	Q806
		Q901	Q902	Q903	Q904	Q905	Q906
							V
C	PLAY	0	1.4	3.5	4.5	6.0	4.0
	RECORD	0	1.4	3.5	4.5	6.0	4.0

S611----- STOP SWITCH (MECHA)
S621~S623- AUTO SWITCH (ALARM / TAPE.RADIO / OFF)
S631----- TIMER STANDBY SWITCH
S801~S809 } REC / PLAY SWITCH (S809.S909 MUTING SWITCH)
S901~S909 }
S711 ~ S717 - TAPE / RADIO / SLEEP SWITCH
S721 ~ S725 - MONO STEREO WIDE SWITCH
S731 ~ S733 - TAPE SELECT SWITCH
S741 ~ S742 - PILOTLAMP BATTERY CHECK SWITCH
S751 ~ S752 - MECHA POWER SWITCH
S761----- AC/DC SWITCH (WITHIN AC SOCKET)
S771----- BEAT SWITCH
S781----- MIC SWITCH (WITHIN L-CH MIC SOCKET)
S791----- MIC SWITCH (WITHIN L-CH LINE IN SOCKET)

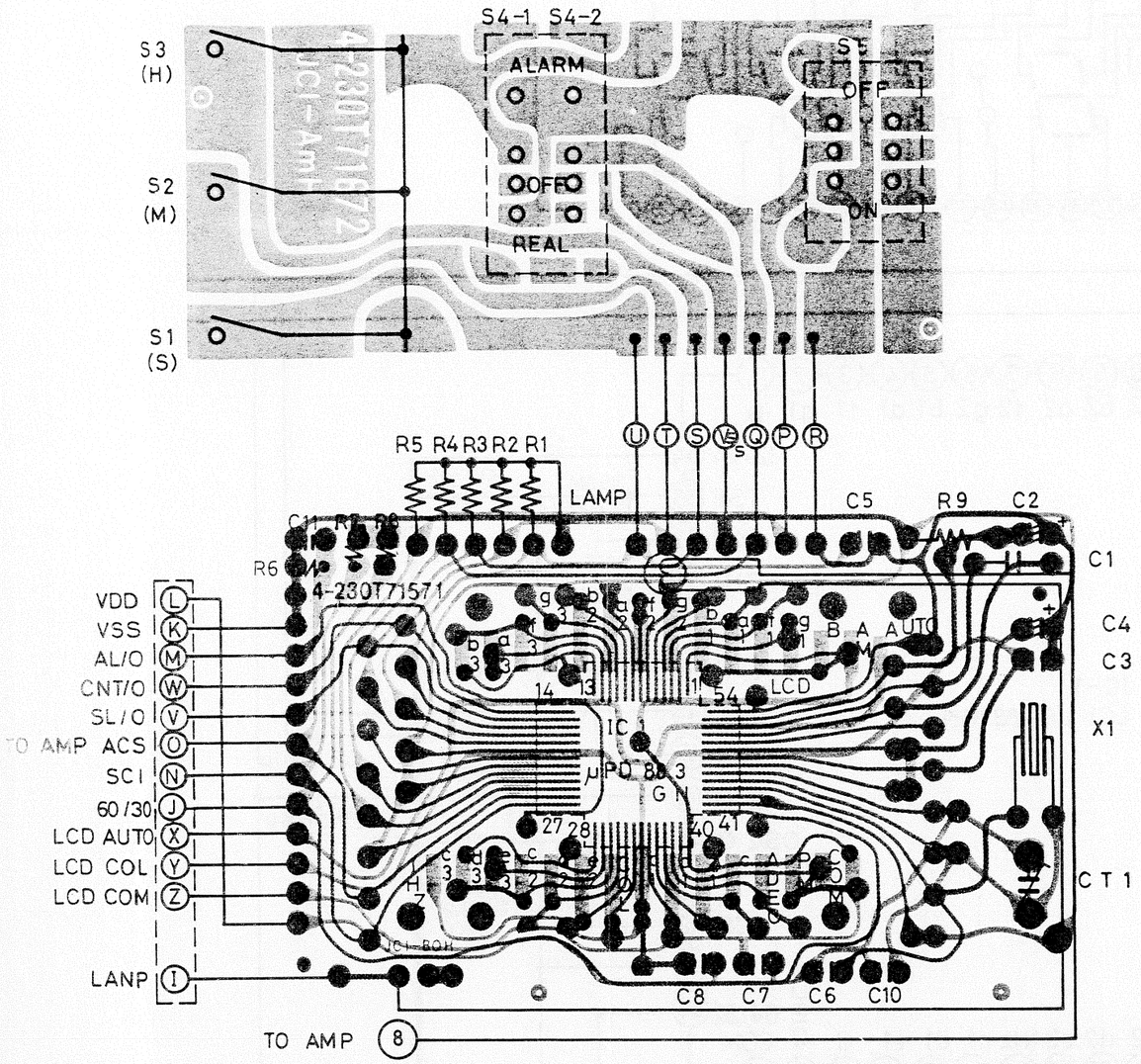
TRANSISTOR CONNECTION


C MIC (L)
C MIC (R)
PILOT LAMP
TO VR L3
TO TUN L
TO TUN R
TO VR R3
TO TUN +
CRO2 ~ C ~ FECC ~ NO
TO CLOCK PL
MIC (L)
MIC (R)
DVT IN
EXT SP (L)
EXT SP (R)
RP. H (R)
RP. H (L)
PL. SW
ON
OFF
TO TUN –
MOTER
MECH. TIMER STAND BY
CLOCK
1.5 V
TO POWER PCB
TO POWER PCB
FROM HEAD PHONE PCB SOCKET
E.H
OSC
IC BA532 52
Q802 2SC693G
Q803 2SC536F
Q804 2SC536G
Q805 2SC536F
Q806 2SC536G
Q901 2SC536G
Q902 2SC536G
Q903 2SC536F
Q904 2SC536G
Q905 2SC536
Q702 2SC945Q
Q706 2SC945Q
Q705 2SD612E
Q7046 2SD612E
Q703 2SA608F
Q701 2SB187RE


BASS
TREBLE
VR 802
VR 803
L
R945
14
T73100
MCL-43HB
11
12
13
TO AMP. PCB.
TO AMP. PCB.
987654321
R.VU METER
L.VU METER
HEADPHONE
WOOFER
R.SP
TWEETER
TWEETER
L.SP
WOOFER
R848
R846
230V
115V
P.T
AC
50 Hz
EXT. DC
DC
AC
BATTERY UM 1x8 12V
FUSE
1A
FUSE
1A
T874
D701
C704
C705
C701
C702
D706
D713
9
10
TO AMP. PCB.


LAMP
LCD
AM
AUTO
PM
COM
CLOCK T.P
AUTO SW
R10 1M
OFF
TA.(RA)
BU.
CNT OUT
SLEEP OUT
S
M
H
ALS
SEC
ACS
SCI
ALO
C5 0.0047
S SW(S1)
M SW(S2)
H SW(S3)
R1 1M
R2 1M
R3 1M
R4 1M
R5 1M
R6 1M
R7 1M
C11 0.001
ALARM
OFF
REAL
TIME SET SW
(S4-1)
(S4-2)
(S5)
ON
OFF
SECOND SW
FUNCTION SW
TA.
RA.
SL.
BATTERY 1.5V
TIMER SW
32
64
OFF
R8 1M
IC-1
LCI μPD833GN
b3 a3 f3 g3 b2 a2 f2 g2 b1 a1 f1 g1 B
c3 d3 e3 c2 d2 e2 1Hz c1 d1 e1 C COM
12/24
TST
C1N
C1P
C2N
COLON
VSH
VDD
OSC O
OSC 1
VSS
64/32
ADEG
R9 1M
C2 0.22μ
C1 0.1μ
C4 0.22μ
C10 5P (NPO)
C3 0.001μ
C7 0.001μ
CT1
X1
C6 22P (NPO)
C8 0.001μ

WIRING DIAGRAM (CLOCK)



SANYO ELECTRIC TRADING CO., LTD.
33, Hiyoshi-cho 2-chome, Moriguchi-shi,
Osaka-fu, 570 JAPAN

JUN.,/'79/1200SI Printed in Japan

MODIFICATION NOTICE

SANYO

CASSETTE RECORDER

M 9990 (USA)	WM-3546
M 9990LG (UK)	WM-4199
M 9990LU (EUROPE)	WM-4184
M 9990 (CANADA)	WM-4088
M 9990K (AUSTRALIA)	WM-3868
M 9990K	WM-3692

Date Apr. 30. 1983 Issued by _____

The following corrections should be made in the SERVICE MANUALS and PARTS (PRICE) LIST.

		Section	Key No.	Part No.	Description	Q'ty	Remark	Reason
1	From	Mechanism	447	141-0-741T-12700	Lever Assy			E
	To		"	141-2-742T-12700	Lever			
2	From							
	To							
3	From							
	To							

INTERCHANGEABLE NOT INTERCHANGEABLE	Serial No. / Chassis No. Effective from
Q'ty of initial production before modification.	Identification of modified unit.

REASON FOR MODIFICATION

A ..... Standardization
B ..... Change of materials
C ..... Improvement of reliability
D ..... Improvement of performance
E ..... Miss print
F ..... Miss register
G .....

Printed in Japan 14000

SANYO ELECTRIC TRADING CO., LTD.
OSAKA, JAPAN

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